

## FOREWORD

The Ministry of Education and Skills Development is pleased to present the revised junior secondary school syllabuses. This marks a major milestone towards the attainment of quality education in Botswana. The revised syllabuses signals another major milestone in the attainment of the ideals reflected in the Revised National Policy on Education and brings closer the realization of the aspirations reflected in Vision 2016. The publication of these syllabuses is also a deliberate effort to provide accessible quality education for the creation of an educated labour force. It has been observed that countries with superior education systems are also the most economically successful. Thus, high quality education is seen as a vital pre-requisite in increasing productivity and competitiveness leading to national growth and development and subsequently, a higher standard of living for all citizens.

The revised junior secondary syllabuses come at a time of unprecedented knowledge explosion, technological changes, a fluid socio-economic context and an increasingly interdependent regional and global economy. In this age of global competitiveness, it is important that all countries foster human resources by developing requisite competencies among young people. Survival in this millennium depends on the ability to effectively accommodate and manage change, and to adapt to the changing socio-economic and cultural plains. It is the wish of the Ministry of Education and Skills Development to prepare young Batswana for future growth and adaptation to ongoing changes in the socio-economic context.

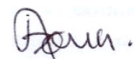
The revised junior secondary programme has not been drastically changed. It is still built on the ten year basic education philosophy that seeks to provide quality learning experiences. It provides students with a broad based education that equips students' with knowledge and skills that are transferable to everyday life. The content has been selected from the students' immediate environment to facilitate understanding and ease of transfer of skills. Furthermore, the programme aims at creating and sustaining a conducive environment for learning and teaching that allows students to excel within

their own capabilities. A deliberate attempt has been made to infuse and integrate emerging issues such as Environmental Education, HIV/AIDS Education, Disaster Management, Anticorruption Culture, Emotional Intelligence, Civic Education and the world of work. The programme also pays attention to the all round development of the individual and the inculcation of attitudes and values that nurture respect for one's self and for others. Life skills education has been integrated into the programmes.

The learners are exposed to a range of knowledge and foundation skills such as numeracy, literacy, prevocational and problem solving skills. It also focuses on the development of desirable attitudes towards different types of work, social and moral values that are expected of them at the end of the program. The implementation of the revised programme begins in 2010.

Critical to the success of the revised junior secondary programme is the recognition of individual talents, needs and learning styles. Thus, the role of the teacher in the classroom must be that of a facilitator for effective learning to occur. The teacher must be conscious of the students' needs to take a certain measure of responsibility for their own learning. The teacher must also take cognisance of the broad range of ability of the student body and the different levels of achievement. This entails the use of participatory teaching and learning styles that provide a rich diverse learning environment.

On behalf of the Ministry of Education and Skills Development, I wish to record my appreciation to members of the National Panels and Standing Committees, school heads, teachers, institutions and other organisations for their invaluable contributions during the revision of these syllabuses.



**Permanent Secretary**  
**Ministry Of Education and Skills Development**

## **ACKNOWLEDGEMENTS**

The Department of Curriculum Development and Evaluation wishes to express its sincere gratitude to the Agriculture National Panel and Standing Committee members who worked tirelessly in the development of the Agriculture syllabus.

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The department would also like to thank all Agriculture teachers who participated in the various consultative meetings and workshops in different parts of the country. It is our hope and belief that this document reflects the outcomes of a genuine collegial and collaborative discourse across a wide educational spectrum.

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## **INTRODUCTION**

The Junior Certificate Agriculture syllabus is a three-year educational programme that is responding to among others, the Revised National Policy on Education (1994). The policy recommended that the general curriculum be made as vocational as possible. The syllabus is also a response to the junior secondary evaluation exercise that was undertaken by the Department of Curriculum Development and Evaluation in 2002.

The Junior secondary evaluation exercise revealed a number of challenges, problems, successes and issues that were deemed to be of great national importance in the implementation of the JC Agriculture curriculum. Some of the issues raised were as follows: the Agriculture syllabus was said to be very congested with lots of information and complicated concepts that the teachers identified. There were a number of other issues which the teachers found difficult to teach like the high rate of redundancies found across the syllabus. This therefore called for a comprehensive review of the Junior Secondary Agriculture syllabus, which took into consideration these many concerns raised by the teachers.

There are a number of protocols and agreements to which Botswana is signatory. Such protocols require that Botswana make a number of changes and considerations that comply with their provisions. These protocols are the Millennium Development Goals (MDGs), Education for Sustainable Development, Dakar Framework, Educational For All etc. All these protocols and agreements address issues of education from all fronts. The Agriculture syllabus has captured most of the issues addressed in the agreements.

## **RATIONALE**

The Junior Certificate Agriculture syllabus is a response to the different policies that government has come up with. The main policy that guided

the development of this syllabus is the Revised National Policy on Education (RNPE) of 1994. This policy documents states that the curriculum should be made as vocationalised as possible. That includes increasing the number of practical subjects and/or making the subjects as practical as possible. It also advocates for the inclusion of a number of contemporary or cross cutting issues such environmental concerns, HIV and AIDS, entrepreneurial issues etc. These issues have since been catered for in this syllabus.

The National guiding policy or VISION 2016 advocates for a number of pillars such as an educated, informed nation, a prosperous, productive and innovative nation, have all been promoted in this syllabus.

The Junior Certificate Agriculture syllabus is a response to changes and challenges that the country has been facing in the field of Agriculture. The changes that have taken place are the introduction of a new National Agriculture policy called the National Agricultural (NAMPAAADD), which is meant to promote Agricultural production and puts a lot of emphasis on the promotion of some areas of agriculture such as dairy production. The contribution of Agriculture to the national GDP has been declining over the years (from 46% at independence to a mere 2.6 %) in 2007, especially since the discovery of diamond, which the country is heavily dependent on. Government has made call and efforts for the economy to be diversified and agriculture is one way the economy can be diversified. Agriculture is expected to play a very important role in the country's development (RNPE, 1994), as about 50% of Botswana live in rural areas, where agriculture plays a major economic role (NAMPAAADD, 2000)

The economic policy of government also emphasises diversification of the economy and government has identified agriculture as a sector that needs to be developed and made attractive to the youth, who are unemployed.

Government has thus initiated programmes that are specifically meant at empowering the youth in various sectors of the economy, some of which are specific to Agriculture. These noble efforts would be more effective when utilized by youth who have gone through a relevant training programmes offered in this syllabus. The Junior secondary Agriculture syllabus aims at changing the attitudes of the learners towards the practical subjects. Teaching of Agriculture at this level will further encourage learners to develop positive attitudes towards practical work and inculcate the idea of making agriculture a business enterprise.

Furthermore, the syllabus addresses a wide variety of contemporary issues/emerging issues such as HIV and AIDS, Environmental Awareness, gender issues, and population issues. These will enable the learners to learn about sustainable agriculture, which looks at achieving maximum agricultural production at minimum environmental costs for future generations.

#### **AIMS OF THE TEN-YEAR BASIC EDUCATION PROGRAMME**

On completion of the Ten-Year Basic Education Programme, learners should have:

1. developed competency and confidence in the application of computational skills in order to solve day to day problems.
2. developed an understanding of business, everyday commercial transactions, and entrepreneurial skills.
3. developed critical thinking, problem-solving ability, individual initiative, interpersonal and inquiry skills.
4. developed desirable attitudes towards different types of work and the ability to assess personal achievement and capabilities realistically in pursuit of appropriate career/employment opportunities/possibilities and or further education.
5. acquired knowledge, skills and attitudes in food production and industrial arts for self-reliance and self-sufficiency.
6. developed awareness and or literacy and understanding of the significance of computers in the world of work.
7. acquired knowledge and understanding of their environment and the need for sustaining utilisation of natural resources.
8. developed desirable attitudes/behavioural patterns in interacting with the environment in a manner that is protective, preserving and nurturing.
9. acquired knowledge and understanding of society, appreciation of their culture including languages, traditions, songs, ceremonies, customs, social norms and a sense of citizenship.
10. developed the ability to express themselves clearly in English, in Setswana and a third language both orally and in writing, using them as tools for further learning and employment.
11. acquired the basic science knowledge and skills, including basic knowledge of the laws governing the natural world.
12. acquired a good knowledge and practice of moral standards and health practices that will prepare them for responsible family and community life.
13. developed their own special interests, talents and skills whether these be dexterity, physical strength, intellectual ability, and/or artistic gifts.
14. acquired an appreciation of technology and technological skills including basic skills in handling tools and materials.
15. gained the necessary knowledge and ability to interact with and learn about their community, the government of their country and the world around them.

## **AIMS OF THE JUNIOR SECONDARY EDUCATION PROGRAMME**

On completion of the Three Year Junior Certificate Programme, students should have:

1. Developed competence and confidence in the application of computational skills in order to solve day to day problems
2. Acquired knowledge of business, everyday commercial transactions and entrepreneurship
3. Developed critical thinking, problem solving ability, individual initiative, creativity, interpersonal and inquiry skills
4. Developed desirable attitudes towards different types of work and the ability to assess personal achievement and capabilities realistically in pursuit of appropriate career/ employment opportunities/ possibilities and/ or further education and training
5. Acquired knowledge, skills and desirable agricultural production and industrial arts attitudes for self- reliance and self sufficiency
6. Developed literacy and understanding of the significance of ICT in the world of work and in every sphere of life
7. Acquire knowledge and understanding of their environment and the need for sustainable utilization of natural resources
8. Developed desirable values, attitudes and behaviour in interacting with the environment in a manner that is protective, preserving, and nurturing
9. Acquired knowledge and understanding of society, appreciation of different cultures, religion and a sense of citizenship
10. Developed tolerance towards different cultures, pride in own culture and unity in diversity
11. developed the ability to express themselves clearly in English, Setswana, Modern Foreign Language and/or a third language and sign language, using them as tools for further learning and employment
12. Acquired science knowledge, skills and understanding of laws and principles governing the natural world
13. Acquired knowledge, attitudes, moral standards, life skills and health practices including awareness and management of epidemics that will prepare them for responsible and productive family and community life
14. Developed their special interests, talents and skills, including dexterity, physical strength, intellectual ability, aesthetics and/ or artistic gifts
15. Developed an appreciation of technology and acquired technological skills including skills and safety precautions in handling tools and materials
16. Acquired knowledge and ability to interact with and learn about their community, the government of their country and the world around them
17. Acquired knowledge and skills that promote democracy, good governance, peace and security

## **AIMS OF THE THREE-YEAR JUNIOR SECONDARY AGRICULTURE PROGRAMME**

On completion of the Three Year Junior Secondary Education Programme, learners should have:

1. Developed competence and confidence in the application of computational skills in order to solve Agriculture-related problems
2. Acquired knowledge and develop entrepreneurial skills needed to run a viable agribusiness
3. Developed critical thinking, problem solving ability, individual initiative, creativity, interpersonal and inquiry skills
4. Developed desirable attitudes towards agricultural work and the ability to assess personal achievement and capabilities realistically in

pursuit of appropriate career/ employment opportunities/ possibilities and/ or further education and training

5. Acquired knowledge, skills and desirable agricultural production attitudes for self- reliance and self sufficiency
6. Developed ICT skills applicable in the field of Agriculture
7. Acquired knowledge and understanding of their environment and the need for sustainable utilization of natural resources
8. Developed desirable values, attitudes and behaviour in interacting with the environment in a manner that is protective, preserving, and nurturing
9. Acquired Agricultural science knowledge, skills and understanding of laws, concepts and principles governing the natural world
10. Acquired knowledge, attitudes, moral standards, life skills and health practices including awareness and management of epidemics that will prepare them for responsible and productive family and community life
11. Developed their special interests, talents and skills, including dexterity, intellectual ability, aesthetics and/ or artistic gifts
12. Developed an appreciation of technology and acquired technological skills including skills and safety precautions in handling tools and materials

## **EXPECTED CRITICAL COMPETENCIES**

At the end of form three, learners should have: -

### **Cognitive Domain**

- Acquired an understanding of the basic concepts and principles involved in the growth, development and improvement of plants and animals;
- Acquired an understanding of the problems in agriculture, and be able to identify them, as well as suggest or devise possible means of solving them;

- Acquired an understanding of the basic concepts and principles involved in the use, handling, maintenance and storage of farm machinery
- Acquired an understanding of the basic concepts and principles involved in the water management
- Acquired knowledge of basic concepts such as measuring, observation and keeping accurate records;
- Apply the basic concepts of agricultural economics which treats Agriculture as a business enterprise
- Acquired an understanding of the necessary concepts and principles of sustainable agricultural production.

### **Psychomotor Domain**

- Developed skills in arable and pastoral farming;
- Acquired knowledge and developed skills and basic concepts such as measuring, observation and keeping accurate records;
- Developed skills in the correct use, storage, handling and servicing of commonly used farm tools and equipment;
- Acquired the skills required to protect and keep the maintain a sound environment
- Developed measuring, observation and the record keeping skills
- Developed the necessary skills involved in water management/conservation
- Developed the entrepreneurial skills needed to treat Agriculture as a business enterprise

### **Affective Domain**

- Acquired an appreciation of Agriculture as a business enterprise and a base for national economic development;



- Developed an appreciation of the need to utilize the environmental resources in a sustainable way;
- Acquired awareness about HIV and AIDS and its impact on Agricultural productivity;
- Developed an appreciation of most of the contemporary issues in Agriculture.
- Acquired the enthusiasm for caring out practical work and developed the right attitude towards Agriculture.

## **TEACHING APPROACHES**

The syllabus encourages a learner-centred approach as prescribed by the RNPE. This means that the teachers should use a variety of teaching/learning methods such as inquiry, demonstration, practical work, project work, case studies, field trips, discussions, ICT-guided learning etc. The teaching methods should expose the learners to the day-to-day practical applications of agriculture e.g. lawn management, preservation and processing, and gardening etc. The content offered to the learners should be as contextual as possible.

It should be noted that infusion and integration of emerging issues should be done at class room level as much as possible where appropriate.

## **ASSESSMENT**

Assessment is an all inclusive process of monitoring and keeping track of the learner's progress over time. It is an integral part of the teaching and learning process. Assessment should take cognisance of learners with special needs. Formative assessment should be done as a diagnostic process of classroom work and should thus be carried regularly. Summative assessment on the other hand is used to measure the learner's achievement at the end of the programme.

The Junior Secondary Agriculture syllabus should be assessed both theoretically and practically. This would be determined by the Botswana Examination Council.

## **INCLUSIVE EDUCATION**

The Botswana government through the RNPE (1994) has made a commitment to make the education system as inclusive as possible. Recommendation 11.2 states that “government is committed to the education of all children including the disabled ones and therefore will intensify efforts to increase access to education for disabled children...”. The Botswana government is also a signatory to the UNESCO framework for action on special Needs Education, which urges schools to accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other condition. This includes disabled and gifted children...”

To this end, the Department of Curriculum Development and valuation has decided to develop an inclusive curriculum that caters for the different disabilities/ challenges through differentiated objectives. The syllabus is premised on the concept of inclusion which requires an enabling environment be created for all groups of learners. Learners should not be left out of their physical, intellectual or emotional challenges. All learners have a right to access a learning package. Inclusive education commits teachers to ensure that all learners overcome potential barriers to learning and assessment. It requires staff to modify programmes of study to give all learners relevant and appropriately challenging work. The UNESCO (1994) Framework For Action on Special Needs Education urges schools to ‘accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions. This should include disabled and gifted children... and other children from disadvantaged or marginalized areas or groups.

## **EMERGING ISSUES**

In an endeavour to ensure that the curriculum is responsive to the needs of society, emerging issues should be infused and integrated at classroom level. Emerging issues help learners to appreciate the challenges and developments happening around them and this plays a major role in preparing them for life, citizenship and the world of work.

## **TIME ALLOCATION**

The Junior Secondary Agriculture syllabus has been allocated four (4) periods of forty minutes per week in a five (5) day timetable.

## **SYLLABUS ORGANISATION**

The Junior Certificate Agriculture syllabus has been divided according to Form 1, 2 and 3. The syllabus content is arranged in units or topics as follows:

### **Unit 1: General Agriculture**

Topic: Introduction to Agriculture

### **Unit 2: Soil Science**

Topic: Soil Fertility

### **Unit 3: Crop Husbandry**

Topics:

- Principles of crop production
- Field crop production
- Fruit tree production
- Forestry
- Vegetable production

### **Unit 4: Animal Husbandry**

Topics: Animal Nutrition

Animal husbandry

Bee keeping

Fish farming

Pig production

Rabbit production

Chicken production

Reproduction and breeding in cattle

Sheep/ goat

Beef production

Dairy production

### **Unit 5: Agricultural Economics**

Topic: Farm management

There is a choice in Unit 4.2 Animal Husbandry, where the learners are expected to study **one** animal from the list of animals provided. Otherwise all the other topics are compulsory and must be taught to all.

## FORM ONE

UNIT1.1: GENERAL AGRICULTURE		
TOPIC 1.1.1: INTRODUCTION TO AGRICULTURE		
Sub Topics	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Importance of Agriculture	1.1.1.1 appreciate the importance of agriculture in Botswana.	1.1.1.1.1 define agriculture 1.1.1.1.2 discuss the social and economic importance of Agriculture in Botswana 1.1.1.1.3 discuss the impact of HIV and AIDS on agricultural productivity 1.1.1.1.4 explain the impact of agricultural activities on the environment 1.1.1.1.5 describe the relationship between Agriculture and other subjects 1.1.1.1.6 describe the branches of Agriculture.
Agriculture Careers and Training	1.1.1.2 appreciate the career opportunities existing in agriculture.	1.1.1.2.1 describe careers opportunities in Agriculture 1.1.1.2.2 discuss the entry requirements to agricultural institutions .
Food Production in Botswana	1.1.1.3 understand the food production situation in Botswana.	1.1.1.3.1 discuss the food production situation in Botswana 1.1.1.3.2 distinguish between food security and food self-sufficiency 1.1.1.3.3 describe factors limiting food production and security in Botswana 1.1.1.3.4 explain ways by which food production and security in Botswana can be improved 1.1.1.3.5 describe strategies aimed at improving food production and security in Botswana 1.1.1.3.6 distinguish between arable, pastoral and mixed farming 1.1.1.3.7 distinguish between commercial and subsistence farming 1.1.1.3.8 state problems experienced by commercial farmers 1.1.1.3.9 suggest how the identified problems can be solved.
Tools, Implements and Machines	1.1.1.4 develop skills on the use tools, implements and machinery appropriately in agricultural production.	1.1.1.4.1 differentiate between a tool, implement and a machine 1.1.1.4.2 identify hand tools, implements and machines used in farming 1.1.1.4.3 demonstrate the appropriate use of tools and implements 1.1.1.4.4 use farm tools and machines safely

		<p>1.1.1.4.5 describe the care of farm tools and machines</p> <p>1.1.1.4.6 demonstrate the appropriate storage of tools and implements</p> <p>1.1.1.4.7 explain mechanization</p> <p>1.1.1.4.8 state the advantages and disadvantages of mechanization</p> <p>1.1.1.4.9 describe the problems caused by tools, implements and machines on the environment</p> <p>1.1.1.4.10 suggest solutions to the problems caused by farm tools and implements.</p>
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UNIT 1. 2: SOIL SCIENCE		
TOPIC 1.2.1: SOIL FERTILITY		
Sub Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Soil Fertility	1.2.1.1 develop skills required in the application of fertilizers.	1.2.1.1.1 explain soil fertility 1.2.1.1.2 define fertilizer 1.2.1.1.3 state the importance of fertilizers to the soil 1.2.1.1.4 distinguish between organic and inorganic fertilizers 1.2.1.1.5 state the advantages and disadvantages of organic and inorganic fertilizers 1.2.1.1.6 determine the application rates of fertilizers 1.2.1.1.7 differentiate between basal and top dressing 1.2.1.1.8 demonstrate the fertilizer application methods 1.2.1.1.9 distinguish between major and minor elements 1.2.1.1.10 classify plant nutrients as major and minor elements 1.2.1.1.11 identify the major elements found in fertilizers 1.2.1.1.12 state the sources of nitrogen, phosphorous and potassium 1.2.1.1.13 state the functions of nitrogen, phosphorous and potassium in crops. 1.2.1.1.14 identify the symptoms displayed by plants lacking nitrogen, phosphorous and potassium 1.2.1.1.15 describe the symptoms displayed by plants having excess supply of nitrogen, and phosphorous 1.2.1.1.16 explain how nitrogen, phosphorous and potassium can be lost from the soil 1.2.1.1.17 suggest ways by which soil fertility can be maintained or improved 1.2.1.1.18 explain the negative effects of fertilizers on the environment.
	1.2.1.2 understand the effects of soil pH on plant growth.	1.2.1.2.1 define soil pH 1.2.1.2.2 explain the effects of soil pH on plant growth 1.2.1.2.3 determine the pH of the soil 1.2.1.2.4 identify crops to be grown in different soil pH 1.2.1.2.5 state the activities that alter the soil pH 1.2.1.2.6 describe ways of regulating soil Ph.

<b>UNIT 1.3 : CROP HUSBANDRY</b>		
<b>1.3.2: PRINCIPLES OF CROP PRODUCTION</b>		
<i>Sub Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Systems of Crop Production	1.3.2.1 develop an understanding of the different systems of growing crops.	1.3.2.1.1 describe monoculture, mixed cropping, continuous cropping, inter- cropping, mono cropping and crop rotation 1.3.2.1.2 state the advantages and disadvantages of each of the systems 1.3.2.1.3 explain the principles of crop rotation.
Land Preparation	1.3.2.2 acquire knowledge on factors influencing the selection of garden site	1.3.2.2.1 explain factors considered when determining the location of a garden or field 1.3.2.2.2 select a suitable site for growing crops/trees.
	1.3.2.3 develop practical skills to carry out pre-planting operations	1.3.2.3.1 state the reasons for clearing or stumping fields 1.3.2.3.2 explain the difference between primary and secondary tillage 1.3.2.3.3 identify primary and secondary tillage implements 1.3.2.3.4 explain the reasons for ploughing the soil 1.3.2.3.5 state the reasons for levelling the soil after ploughing 1.3.2.3.6 state the reasons for applying fertilizer before planting 1.3.2.3.7 name implements used for fertilizer application 1.3.2.3.8 identify fertilizer application implements 1.3.2.3.9 prepare a plot/ hole suitable for growing crops/trees.
Planting Methods and Techniques	1.3.2.4 develop skills in the different techniques and methods of planting	1.3.2.4.1 distinguish between direct and indirect planting, row planting and broadcasting 1.3.2.4.2 state the advantages and disadvantages of the different planting methods and techniques 1.3.2.4.3 apply the different methods and techniques of planting.
	1.3.2.5 acquire knowledge and skills in the planting depth of seeds and the spacing of crops.	1.3.2.5.1 explain the factors influencing the depth of planting seeds 1.3.2.5.2 determine the appropriate depth of planting seeds for crop production 1.3.2.5.3 explain the factors influencing the spacing of crops 1.3.2.5.4 determine the appropriate spacing of crops 1.3.2.5.5 apply the correct planting depth and crop spacing.

Management Practices	1.3.2.6 acquire skills required in crop management practices.	1.3.2.6.1 define mulching and weeding 1.3.2.6.2 state the reasons for watering, mulching and weeding 1.3.2.6.3 demonstrate proper ways of watering seedlings 1.3.2.6.4 identify materials used for mulching 1.3.2.6.5 suggest the appropriate time for removing mulch after planting seeds 1.3.2.6.6 demonstrate mulching 1.3.2.6.7 identify common weeds found in Botswana 1.3.2.6.8 define parasitic weed 1.3.2.6.9 suggest ways by which weeds can be controlled 1.3.2.6.10 demonstrate proper weeding of seedbeds 1.3.2.6.11 explain thinning, transplanting, pruning, trellising and staking 1.3.2.6.12 state the advantages and disadvantages of thinning, transplanting, pruning and supporting plants 1.3.2.6.13 demonstrate thinning 1.3.2.6.14 determine the correct space for thinning crops 1.3.2.6.15 identify tools used for transplanting 1.3.2.6.16 demonstrate transplanting of seedlings 1.3.2.6.17 demonstrate the pruning of crops 1.3.2.6.18 state the appropriate timing of transplanting seedlings.
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1.3.3 FIELD CROP PRODUCTION		
Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Field Crop Production	1.3.3.1 acquire knowledge on cereal and legume crop production.	1.3.3.1.1 classify field crops 1.3.3.1.2 identify the varieties of field crops 1.3.3.1.3 describe the type of soil and climatic conditions necessary for the growth of field crops 1.3.3.1.4 determine the type of manure or fertilizer required for the normal growth of field crops 1.3.3.1.5 calculate the amount of fertilizer to be applied when growing field crops 1.3.3.1.6 measure accurately the fertilizer to be added to the soil when growing field crops 1.3.3.1.7 apply fertilizers using appropriate methods 1.3.3.1.8 state the precautions to be taken into account when applying fertilizer in crop fields 1.3.3.1.9 state the reasons for treating seeds before planting 1.3.3.1.10 demonstrate the various methods (both traditional and modern) of treating seeds 1.3.3.1.11 outline the precautions to be taken when handling treated seeds 1.3.3.1.12 determine the appropriate depth of planting and spacing of the crops.
	1.3.3.2 develop skills on the production of legumes and cereals.	1.3.3.2.1 practice correct management when raising crops 1.3.3.2.2 identify pests and diseases that affect crops 1.3.3.2.3 discuss methods used to control the identified pests and diseases of crops 1.3.3.2.4 outline precautions taken into account when using chemicals and or pesticides 1.3.3.2.5 describe the effects of pesticides or chemicals used in crop fields on the environment 1.3.3.2.6 suggest methods of controlling pests which are not detrimental to the environment 1.3.3.2.7 demonstrate the correct technique of using a sprayer 1.3.3.2.8 identify chemicals used to control pests and diseases affecting the crops 1.3.3.2.9 demonstrate harvesting and marketing of field crops 1.3.3.2.10 determine market prices for harvested legume and cereal crops



		1.3.3.2.11 identify storage pests affecting field crops 1.3.3.2.12 identify the damage caused by storage pests on the crops studied 1.3.3.2.13 demonstrate methods used to treat or protect stored seeds from pest damage.
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<b>UNIT 1.4: ANIMAL HUSBANDRY</b>		
<b>1.4.1: ANIMAL NUTRITION</b>		
<i>Sub Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Animal Feed	1.4.1.1 acquire knowledge on the different types of livestock feeds and their nutritional value.	1.4.1.1.1 explain animal nutrition 1.4.1.1.2 explain reasons for feeding animals 1.4.1.1.3 explain the importance of the different feed substances in animal nutrition 1.4.1.1.4 describe a balanced ration 1.4.1.1.5 differentiate between maintenance and production ration 1.4.1.1.6 identify roughages and concentrates 1.4.1.1.7 compare and contrast the nutritional value of roughage and concentrate feeds 1.4.1.1.8 explain supplementary feeding 1.4.1.1.9 identify supplementary feeds of livestock found in Botswana.
	1.4.1.2 acquire knowledge of the nutritional diseases common in Botswana.	1.4.1.2.1 explain nutritional diseases 1.4.1.2.2 identify nutritional diseases affecting livestock production in Botswana 1.4.1.2.3 describe the cause(s), symptoms, control and preventative measures against aphosphorosis.

( Study any one from Bee keeping, Fish farming, Pig farming, Rabbit Production)

#### 1.4.2: BEE KEEPING

<i>Sub Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Bee biology	1.4.2.1 acquire knowledge and understanding of the anatomy and the duties of the various colony members.	1.4.2.1.1 describe the digestive system of a bee 1.4.2.1.2 describe the male and female reproductive systems of bees 1.4.2.1.3 explain the functions of each of the different parts of bees 1.4.2.1.4 explain adaptation of bees to the environment 1.4.2.1.5 describe the composition of a bee colony 1.4.2.1.6 identify members of a bee colony 1.4.2.1.7 explain the duties of each member of the bee colony.
Bee manipulation	1.4.2.2 develop skills in bee manipulation.	1.4.2.2.1 explain bee manipulation 1.4.2.2.2 describe the precautions taken when manipulating bees 1.4.2.2.3 identify equipment used when manipulating bees 1.4.2.2.4 demonstrate the manipulation of bees.
Bee keeping management	1.4.2.3 develop skills of managing bees.	1.4.2.3.1 state factors to consider when choosing a site for bee-keeping 1.4.2.3.2 list materials required when embarking on a bee-keeping project 1.4.2.3.3 demonstrate the making of a bee hive 1.4.2.3.4. describe the catching of bees and the precautions to be taken 1.4.2.3.5 identify bee products 1.4.2.3.6 demonstrate the harvesting and marketing of bee products.
Bee pests and diseases	1.4.2.4 acquire knowledge on pests, diseases and toxicology of bees.	1.4.2.4.1 identify pests that attack bees 1.4.2.4.2 describe diseases affecting bees 1.4.2.4.3 define bee toxicology 1.4.2.4.4 identify chemicals harmful to bees 1.4.2.4.5 demonstrate methods of controlling pests and diseases of bees.

<b>1.4.2 FISH FARMING</b>		
<i>Sub Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Importance of fish	1.4.2.1 acquire an understanding of the importance of fish and the current state of fish production in Botswana.	1.4.2.1.1 state the nutritional value of fish 1.4.2.1.2 describe the current state of the fish industry in Botswana 1.4.2.1.3 state the factors limiting fish production in Botswana.
Breeds and types of fish	1.4.2.3 know the different breeds or types of fish.	1.4.2.3.1 name types of fish found in the world 1.4.2.3.2 identify the different types of fish found in Botswana.
Construction of a fish pond	1.4.2.4 know the materials needed and how to build a fish pond.	1.4.2.4.1 list materials required for the construction of a fish pond 1.4.2.4.2 describe the construction of a fish pond 1.4.2.4.3 demonstrate the construction of a fish pond.
Management of fish	1.4.2.5 develop skills of fish management practices.	1.4.2.5.1 identify the different types of feeds for fish 1.4.2.5.2 determine the amount of feed to be given to fish in a fish pond 1.4.2.5.3 demonstrate the handling and transportation of live fish. 1.4.2.5.4 outline methods used to control fish population.
Parasites and diseases of fish	1.4.2.6 acquire knowledge on parasites and diseases affecting fish.	1.4.2.6.1 identify parasites of fish 1.4.2.6.2 identify diseases affecting fish 1.4.2.6.3 identify the cause, transmission and symptoms of any nutritional and parasitic diseases of fish 1.4.2.6.4 demonstrate control and prevention of any nutritional and parasitic diseases of fish.
Fishing methods	1.4.2.7 develop the skills of catching fish.	1.4.2.7.1 identify tools or equipment used for catching fish 1.4.2.7.2 demonstrate the catching of fish in a fish pond.
Marketing of fish	1.4.2.8 acquire knowledge and skills of the different methods of processing and marketing of fish.	1.4.2.8.1 demonstrate the methods of processing and preserving fish 1.4.2.8.2 outline the advantages and disadvantages of each method of processing fish 1.4.2.8.3 describe the forms in which fish can be marketed 1.4.2.8.4 demonstrate the marketing of fish in Botswana.

<b>1.4.2 PIG PRODUCTION</b>		
<i>Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Starting a pig production enterprise	1.4.2.1 understand the factors to be considered before starting a pig production enterprise.	1.4.2.1.1 state the factors considered before starting a pig production enterprise 1.4.2.1.2 describe the method pig production 1.4.2.1.3 describe the nature and type of preparations to be made before acquiring pigs for an enterprise 1.4.2.1.4 prepare a budget for a pig production enterprise.
Management of pigs	1.4.2.2 understand the management activities carried out in a piggery.	1.4.2.2.1 list materials required for the construction of a pig sty 1.4.2.2.2 explain the use of the various units in a pig sty 1.4.2.2.3 identify the types of feeds given to pigs at various stages of their life cycle 1.4.2.2.4 describe flushing 1.4.2.2.5 state the signs of heat in a sow 1.4.2.2.6 describe the feeding of pregnant sows 1.4.2.2.7 demonstrate the preparation of a sow for farrowing 1.4.2.2.8 demonstrate the caring of piglets 1.4.2.2.9 explain creep-feeding 1.4.2.2.10 describe the caring of growers and finishers 1.4.2.2.11 explain teeth-clipping 1.4.2.2.12 discuss the reasons for teeth-clipping.
Parasites and diseases of pigs:	1.4.2.3 acquire knowledge on parasites and diseases of pigs.	1.4.2.3.1 name the parasites that affect pigs 1.4.2.3.2 describe the life- cycle of two common parasite of pigs 1.4.2.3.3 describe the effects of two parasites on pigs 1.4.2.3.4 suggest ways by which the parasites can be controlled or prevented 1.4.2.3.5 name the diseases affecting pigs 1.4.2.3.6 identify the cause, transmission and symptoms of any two diseases of pigs, 1.4.2.3.7 demonstrate the treatment, control and preventative measures against two diseases of pigs.

Marketing of pigs	1.4.2.4 acquire knowledge on the different products and by-products of pigs	1.4.2.4.1 identify of pig products and by-products 1.4.2.4.2 demonstrate the processing of pig products 1.4.2.4.3 demonstrate the marketing of pig products and by-products in Botswana.
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<b>1. 4.2: RABBIT PRODUCTION</b>		
<i>Sub Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Starting production enterprise	1.4.2.1 understand the factors to be considered before starting a rabbit production enterprise.	1.4.2.1.1 state the factors considered when starting a rabbit production enterprise and the methods of production to employ 1.4.2.1.2 describe the nature and type of preparations to be made before acquiring rabbits for an enterprise 1.4.2.1.3 prepare a budget estimate for the rabbit production enterprise.
Management of rabbits	1.4.2.2 develop skills in the management of rabbits.	1.4.2.2.1 state the significance of housing or provision of shelter when raising rabbits 1.4.2.2.2 name the types of feeds suitable for rabbits 1.4.2.2.3 identify the appropriate feeds for rabbits 1.4.2.2.4 explain the reasons for providing food and water regularly to rabbits 1.4.2.2.5 demonstrate the handling of rabbits 1.4.2.2.6 demonstrate the sexing of rabbits.
Parasites and diseases of rabbits	1.4.2.3 acquire knowledge of parasites and diseases affecting rabbits.	1.4.2.3.1 name parasites affecting rabbits 1.4.2.3.2 describe the life- cycles of two common parasites on rabbits 1.4.2.3.3 describe the effects of the parasites of rabbits 1.4.2.3.4 suggest ways by which the parasites can be controlled or prevented 1.4.2.3.5 name diseases affecting rabbits 1.4.2.3.6 identify the cause, transmission and symptoms 1.4.2.3.7 demonstrate the treatment, control and preventive measures against any two diseases of rabbits.
Marketing of rabbits	1.4.2.4 acquire knowledge of the different products and by-products of rabbits and their marketing.	1.4.2.4.1 identify rabbit products and by-products 1.4.2.4.2 demonstrate the processing of rabbits 1.4.2.4.3 demonstrate the marketing of rabbit products and by-products in Botswana.

## FORM TWO

CROP HUSBANDRY		
2.3.4 FRUIT TREE PRODUCTION		
Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Fruits and Fruit trees	2.3.4.1 acquire knowledge and skills on fruit tree production.	2.3.4.1.1 identify indigenous and exotic fruits and fruit trees found in Botswana 2.3.4.1.2 state the importance of fruits and fruit trees 2.3.4.1.3 describe the requirements for the establishment of an orchard 2.3.4.1.4 explain factors influencing the choice of fruit trees to grow 2.3.4.1.5 list materials required for the construction of a nursery 2.3.4.1.6 identify materials required for nursery construction 2.3.4.1.7 explain the significance of net shading in a nursery 2.3.4.1.8 prepare the soil or media and fertilizers used in a nursery bed for propagating trees 2.3.4.1.9 demonstrate the preparations done before planting fruit trees.
	2.3.4.2 develop the skills of propagating fruit trees.	2.3.4.2.1 differentiate between sexual and asexual propagation 2.3.4.2.2 identify fruit trees that have been sexually and asexually propagated 2.3.4.2.3 demonstrate grafting, budding, cutting and layering 2.3.4.2.4 determine the size of cuttings to use when propagating trees 2.3.4.2.5 determine the appropriate time for propagating fruit trees using asexual methods 2.3.4.2.6 describe the necessary care given to seedlings in a nursery 2.3.4.2.7 demonstrate the correct management practices of seedlings correctly in a nursery 2.3.4.2.8 state factors influencing the size and or depth of a planting hole for a fruit tree seedling 2.3.4.2.9 prepare planting holes of appropriate dimensions for seedlings 2.3.4.2.10 demonstrate the transplanting of fruit tree seedling



		2.3.4.2.11 describe the general management practices carried out in an orchard 2.3.4.2.12 describe the methods of harvesting fruits 2.3.4.2.13 demonstrate the harvesting and processing of fruits 2.3.4.2.14 state factors considered when marketing fruits and fruits trees
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<b>2.3.5: FORESTRY</b>		
<i>Topic</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Importance of trees and tree products	2.3.5.1 acquire knowledge on the importance of the different types of trees found in Botswana.	2.3.5.1.1 identify indigenous and exotic trees found in Botswana 2.3.5.1.2 differentiate between indigenous and exotic trees in Botswana 2.3.5.1.3 identify tree products found in Botswana 2.3.5.1.4 state the importance of trees and tree products.
Veld products	2.3.5.2 acquire knowledge on the different veld products found in Botswana.	2.3.5.2.1 describe veld products 2.3.5.2.2 identify veld products found in Botswana 2.3.5.2.3 state the uses of the veld products identified.
Tree seedlings and seeds	2.3.5.3 acquire knowledge on where tree seeds and seedlings can be obtained in Botswana.	2.3.5.3.1 describe the sources of tree seeds and tree seedlings in Botswana 2.3.5.3.2 describe the seed collection process
	2.3.5.4 acquire knowledge and understand of the factors affecting germination of seeds and treatment of seeds.	2.3.5.4.1 state the factors inhibiting germination of tree seeds 2.3.5.4.2 describe the different seed treatment methods 2.3.5.4.3 demonstrate methods used to treat tree seeds before planting 2.3.5.4.4 calculate the percentage germination of seeds.
Management of woodlots	2.3.5.5 acquire knowledge and appreciation of use and management of woodlots.	2.3.5.5.1 define woodlot 2.3.5.5.2 explain why it is necessary to correctly manage existing woodlots in Botswana 2.3.5.5.3 describe the effective management and utilization of woodlots.
Forestry conservation	2.3.5.6 acquire knowledge and appreciation of the conservation methods of forests.	2.3.5.6.1 define forestry conservation 2.3.5.6.2 explain the importance of forestry conservation 2.3.5.6.3 describe ways by which forests can be conserved.
Agro-forestry	2.3.5.7 acquire knowledge and understand on agro-forestry.	2.3.5.7.1 explain agro-forestry 2.3.5.7.2 discuss the different types of agro-forestry.

<b>UNIT 2.4: ANIMAL HUSBANDRY</b>		
<b>2.4.3: CHICKEN PRODUCTION</b>		
<i>Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Systems of chicken production	2.4.3.1 acquire knowledge and understanding of the raising chickens.	2.4.3.1.1 distinguish between the different systems of raising chickens 2.4.3.1.2 discuss advantages and disadvantages of each system 2.4.3.1.3 describe the different breeds of layers and broilers 2.4.3.1.4 describe the characteristics of a good layer and a good broiler.
Reproductive system of a hen	2.4.3.2 acquire knowledge on the anatomy and physiology of the hen's reproductive system.	2.4.3.2.1 describe the reproductive system of a hen 2.4.3.2.2 state the functions of the reproductive parts 2.4.3.2.3 describe the different parts of the egg 2.4.3.2.4 state the functions of the different parts of an egg.
Chicken production management	2.4.3.3 develop knowledge on the factors to be considered before embarking on a commercial chicken production.	2.4.3.3.1 state the factors to be considered when deciding the type of chickens to raise 2.4.3.3.2 prepare and use financial and production record sheets for the chicken production enterprise 2.4.3.3.3 describe the qualities of a good chicken house 2.4.3.3.4 describe materials used in the construction of a chicken house 2.4.3.3.5 demonstrate the construction of a chicken house 2.4.3.3.6 identify the sources of live chickens 2.4.3.3.7 demonstrate the preparations done the arrival of new chickens.
	2.4.3.4 know the different types of feeds for broilers and layers.	2.4.3.4.1 describe the different types of feeds provided to broilers and layers 2.4.3.4.2 determine the appropriate amounts of feed given to broilers and layers 2.4.3.4.3 explain the importance of keeping the chicken house clean 2.4.3.4.4 demonstrate the cleaning of a chicken house 2.4.3.4.5 explain reasons for providing clean water at all times when managing a chicken enterprise.

	2.4.3.5 acquire knowledge on the type of care given to chicks or young birds.	2.4.3.5.1 describe artificial and natural brooding chicks 2.4.3.5.2 describe the construction of a brooding unit 2.4.3.5.3 describe the methods of heating a brooding unit 2.4.3.5.4 explain reasons for warming the brooding unit 2.4.3.5.5 demonstrate the care given to young birds or chicks in a brooding unit.
	2.4.3.6 develop the skills of managing chickens.	2.4.3.6.1 describe the artificial and natural incubation of eggs 2.4.3.6.2 describe culling, debeaking and vaccination schedule of chickens 2.4.3.6.3 demonstrate culling, debeaking and vaccination of chickens 2.4.3.6.4 state the criteria used when culling chickens.
Parasites	2.4.3.7 know about parasite control in chicken production.	2.4.3.7.1 distinguish between internal and external parasites 2.4.3.7.2 identify common chicken parasites (internal and external) 2.4.3.7.3 identify mites 2.4.3.7.4 identify the harm caused by mites to chickens 2.4.3.7.5 demonstrate control measures against mites.
Diseases	2.4.3.8 acquire knowledge and understanding on the common diseases of chickens and their methods of control.	2.4.3.8.1 identify diseases of chickens 2.4.3.8.2 describe the cause(s) of Newcastle and coccidiosis 2.4.3.8.3 identify the symptoms of Newcastle and coccidiosis 2.4.3.8.4 identify chickens affected by Newcastle and coccidiosis diseases 2.4.3.8.5 demonstrate the treatment, control and preventative measures against Newcastle and coccidiosis.
Marketing of chicken products	2.4.3.9 develop skills in pricing, slaughtering, grading, candling and packaging of eggs and other chicken products.	2.4.3.9.1 describe the slaughtering and processing of chickens 2.4.3.9.2 state the purpose for candling eggs 2.4.3.9.3 demonstrate the candling of eggs 2.4.3.9.4 describe the grading process of eggs 2.4.3.9.5 demonstrate proper packaging of eggs.

UNIT 2.5: AGRICULTURAL ECONOMICS		
2.5.1 FARM MANAGEMENT		
Sub Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Principles of farm management:	2.5.1.1 understand the principles of demand and supply.	2.5.1.1.1 explain farm management 2.5.1.1.2 discuss the importance of farm management 2.5.1.1.3 explain demand 2.5.1.1.4 describe the determinants of demand 2.5.1.1.5 explain supply 2.5.1.1.6 describe the determinants of supply 2.5.1.1.7 describe price determination.
Functions of management	2.5.1.2 appreciate the basic organization, functions and roles of management in a business enterprise.	2.5.1.2.1 discuss the different legal forms of a business organization 2.5.1.2.2 outline an effective organizational structure in a farm 2.5.1.2.3 state the general functions and roles of management in an agribusiness venture 2.5.1.2.4 describe qualities of a good manager 2.5.1.2.5 state factors considered before starting an agricultural production enterprise 2.5.1.2.6 discuss problems experienced by commercial farmers in Botswana 2.5.1.2.7 suggest solutions to the identified problems.
Marketing	2.5.1.3 acquire skills on the marketing of agricultural products	2.5.1.3.1 explain marketing and the marketing concept 2.5.1.3.2 discuss reasons for marketing 2.5.1.3.3 describe the marketing mix 2.5.1.3.4 describe the methods of marketing agricultural products 2.5.1.2.5 describe the utilization of ICT to promote trade in the Agricultural sector 2.5.1.3.6 demonstrate the marketing of agricultural products.
Farm records	2.5.1.4 acquire knowledge and skills of keeping records	2.5.1.4.1 discuss reasons for keeping farm records. 2.5.1.4.2 describe production and financial records 2.5.1.4.3 prepare different types of production and financial records on the school agricultural projects or enterprises using relevant software packages 2.5.1.4.4 interpret the different financial records.

Budgeting	2.5.1.5 acquire skills of preparing budgets.	2.5.1.5.1 discuss reasons for budgeting 2.5.1.5.2 prepare a budget for any chosen farm enterprise 2.5.1.5.3. interpret the budget prepared.
Funding for agricultural enterprises	2.5.1.6 develop knowledge on the different sources of funding for agricultural enterprises in Botswana.	2.5.1.6.1 identify institutions, organisations or agencies assisting agricultural enterprises 2.5.1.6.2 describe the application procedures required by the different institutions, organisations or agencies 2.5.1.6.3 state the conditions attached to funding of agriculture enterprises 2.5.1.6.4 complete application forms from some of the identified funding institutions.
Business plan	2.5.1.7 develop skills on preparing a simple business plan of an agricultural enterprise chosen.	2.5.1.7.1 explain the reasons for conducting a market research 2.5.1.7.2 differentiate between a business idea and business opportunity 2.5.1.7.3 identify business agricultural opportunities 2.5.1.7.4 carry out a market research on the enterprise to be done 2.5.1.7.5 state reasons for preparing a business plan 2.5.1.7.6 explain the elements of the business plan 2.5.1.7.7 prepare and present a business plan on the enterprise chosen

### FORM 3

CROP HUSBANDRY		
3.3.6 VEGETABLE PRODUCTION		
Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Vegetable crops grown in Botswana	3.3.6.1 acquire knowledge and appreciation of the different types of vegetables (both indigenous and exotic) grown in Botswana.	3.3.6.1.1 identify exotic and indigenous vegetable crops grown in Botswana 3.3.6.1.2 state the nutritional value of vegetables 3.3.6.1.3 describe the supply and demand of vegetable production situation in Botswana 3.3.6.1.4 describe opportunities for further vegetable development 3.3.6.1.5 discuss government strategies aimed at improving vegetable production.
Vegetable Production practices	3.3.6.2 acquire knowledge and understanding of the requirements for growing any <b>two</b> crops from the following classes: leaf, legume, root, fruit, bulb and flower.	3.3.6.2.1 state the requirements for the establishment of a vegetable enterprise 3.3.6.2.2 state the factors to be considered when deciding which vegetable crops to grow 3.3.6.2.3 describe the methods of vegetable production to adopt 3.3.6.2.4 identify leaf, legume, root, fruit, bulb and flower vegetables 3.3.6.2.5 explain the basis for the above classification of vegetable crops 3.3.6.2.6 name varieties of vegetable crops chosen for study 3.3.6.2.7 identify varieties of vegetable crops chosen for study 3.3.6.2.8 describe the type of soil and climate suitable for the vegetable crops under study 3.3.6.2.9 identify specific inorganic and organic fertilizers used when growing the selected vegetable crops.
	3.3.6.3 develop skills for preparing different types of seedbeds and management of vegetables.	3.3.6.3.1 describe the different types of seedbeds on which to grow vegetable crops 3.3.6.3.2 compare the advantages and disadvantages of each type of seedbed 3.3.6.3.3 determine which one would be suitable for vegetable production in their locality 3.3.6.3.4 demonstrate the management practices of the crop under study 3.3.6.3.5 explain the reasons for carrying out the management practices.

	3.3.6.4 develop knowledge on the different pests and diseases affecting the vegetable crops under study.	3.3.6.4.1 identify pests affecting vegetable crops 3.3.6.4.2 describe pests affecting the vegetable crops 3.3.6.4.3 identify the damage caused by the pests affecting the crops under study and control methods to be used 3.3.6.4.4 identify the diseases affecting the vegetable crops 3.3.6.4.5 describe the cause, symptoms, treatment, control and preventive measures of any 1 diseases affecting the crops grown 3.3.6.4.6 determine the correct measures to be taken when crops are attacked by diseases.
	3.3.6.5 develop skills necessary in the harvesting, storage, preservation and marketing the vegetable crops under study.	3.3.6.5.1 describe signs of maturity of the vegetable crops 3.3.6.5.2 demonstrate the harvesting and processing of vegetables 3.3.6.5.3 demonstrate the marketing of vegetable crops 3.3.6.5.4 demonstrate the storage and preservation methods of vegetable crops.



ANIMAL HUSBANDRY		
3.4.4 REPRODUCTION AND BREEDING IN CATTLE		
Topics	General Objectives	Specific Objectives
	The learners should be able to:	The learners should be able to:
Reproductive System	3.4.4.1 acquire knowledge and understanding of the anatomy and physiology of cattle.	3.4.4.1.1 describe the reproductive organs of a cow and a bull 3.4.4.1.2 describe puberty 3.4.4.1.3 state the age and weight at which cows reach puberty 3.4.4.1.4 state factors influencing puberty 3.4.4.1.5 describe the process of reproduction in cattle 3.4.4.1.6 describe the oestrous cycle in cows 3.4.4.1.7 explain heat period in animal breeding 3.4.4.1.8 identify signs of heat in a cow 3.4.4.1.9 state the duration of heat period in cows 3.4.4.1.10 describe ovulation 3.4.4.1.11 describe fertilization in cattle 3.4.4.1.12 define gestation period 3.4.4.1.13 state the gestation period in cattle.
Care of the cow during pregnancy	3.4.4.2 acquire knowledge and understanding of the management practises of pregnant cattle.	3.4.4.2.1 describe the type of care necessary during pregnancy of an animal 3.4.4.2.2 define parturition 3.4.4.2.3 describe the signs of parturition in cows 3.4.4.2.4 define dystokia. 3.4.4.2.5 state the causes of dystokia 3.4.4.2.6 explain control of dystokia.
Livestock breeding and improvement	3.4.4.3 acquire knowledge on the methods of breeding and or improving animals.	3.4.4.3.1 define breeding 3.4.4.3.2 describe selection, cross- breeding, inbreeding and upgrading 3.4.4.3.3 state the advantages and disadvantages of each system of breeding 3.4.4.3.4 suggest other ways of animal improvement 3.4.4.3.5 describe methods used to control breeding of cattle.

Mating (natural service) Artificial insemination(AI)	3.4.4.4 acquire knowledge on the differences between artificial and natural service.	3.4.4.4.1 define mating 3.4.4.4.2 describe artificial insemination and natural service 3.4.4.4.3 state the advantages and disadvantages of artificial insemination and natural service 3.4.4.4.4 describe the collection of semen from a bull 3.4.4.4.5 describe conditions necessary for the storage of semen 3.4.4.4.6 describe the period or season when cows are artificially inseminated in Botswana 3.4.4.4.7 name artificial insemination camps in Botswana.
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<b>3.4.5 BEEF PRODUCTION</b>		
<i>Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Characteristics of beef cattle and Breeds of beef cattle in Botswana	3.4.5.1 appreciate the general characteristics of beef cattle found in Botswana.	3.4.5.1.1 describe the general characteristics of beef cattle 3.4.5.1.2 name breeds of beef cattle found in Botswana 3.4.5.1.3 identify breeds of beef cattle found in Botswana 3.4.5.1.4 name beef cattle breeds recommended by the Ministry of Agriculture 3.4.5.1.5 discuss reasons for the recommended breeds in Botswana.
Management of beef cattle	3.4.5.2 acquire knowledge and understanding of the different methods of raising beef cattle practiced in Botswana.	3.4.5.2.1 distinguish between communal and ranching systems of raising beef cattle 3.4.5.2.2 state the advantages and disadvantages of each system of raising beef cattle 3.4.5.2.3 compare and contrast the two systems of raising beef cattle and say which would be most ideal for Botswana.
	3.4.5.3 acquire knowledge and develop appreciation of the significance of providing shelter and feeds to livestock.	3.4.5.3.1 explain the significance of providing housing or shelter to beef cattle 3.4.5.3.2 describe a suitable housing for beef cattle 3.4.5.3.3 describe the types of feeds suitable to beef cattle in Botswana 3.4.5.3.4 explain the importance of regular supply of water for beef cattle 3.4.5.3.5 name sources of water for beef cattle in Botswana 3.4.5.3.6 describe the water cleaning processes for animal consumption.
	3.4.5.4 acquire knowledge on the importance of disbudding, dehorning, identification and weaning.	3.4.5.4.1 distinguish between disbudding and dehorning 3.4.5.4.2 explain the significance of disbudding and dehorning 3.4.5.4.3 name tools used for disbudding and dehorning 3.4.5.4.4 identify tools used for disbudding and dehorning 3.4.5.4.5 define weaning 3.4.5.4.6 state reasons for weaning 3.4.5.4.7 state methods of weaning 3.4.5.4.8 state the age at which beef calves are weaned 3.4.5.4.9 describe the methods of identifying beef cattle 3.4.5.4.10 state the advantages and disadvantages of each method of identification.

Diseases and Parasites of cattle	3.4.5.5 acquire knowledge on the different parasites and diseases affecting beef cattle.	3.4.5.5.1 identify internal and external parasites of beef cattle 3.4.5.5.2 describe the life- cycle of at least 2 internal and 2 external parasites 3.4.5.5.3 identify the harm or damage caused by the chosen parasites in beef cattle 3.4.5.5.4 suggest methods of controlling internal and external parasites 3.4.5.5.5 identify diseases affecting beef cattle 3.4.5.5.6 identify notifiable diseases of beef cattle in Botswana 3.4.5.5.7 state the causes, symptoms, treatment, control and preventive measures against at least two diseases.
Marketing of beef cattle	3.4.5.6 acquire knowledge on the different channels for marketing beef cattle, the various grades of beef used at BMC and the types of products obtained from the beef industry.	3.4.5.6.1 explain methods of marketing beef cattle in Botswana 3.4.5.6.2 state the recommended age and weight at which beef cattle are marketed 3.4.5.6.3 describe the beef grades used at BMC 3.4.5.6.4 identify the beef cattle by- products.

<b>3.4.6 DAIRY PRODUCTION</b>		
<i>Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Management of dairy cows	3.4.6.1 acquire knowledge on the different breeds of dairy cows.	3.4.6.1.1 identify dairy cattle breeds found in Botswana 3.4.6.1.2 describe the characteristics of a good and a bad dairy cow.
	3.4.6.2 acquire knowledge and appreciation of the significance of providing shelter and appropriate feed to dairy cows.	3.4.6.2.1 describe the type of shelter needed for dairy cows 3.4.6.2.2 name the type of feeds suitable for dairy cows 3.4.6.2.3 identify the feed suitable for dairy cows 3.4.6.2.4 explain the significance of good nutrition in dairy production.
	3.4.6.3 acquire knowledge and understanding on the significance of weaning calves in dairy production.	3.4.6.3.1 outline the reasons for weaning calves 3.4.6.3.2 explain the importance of providing calves with colostrum 3.4.6.3.3 state the length of time a calf should stay with its mother before weaning 3.4.6.3.4 describe the care of calves after weaning.
Diseases:	3.4.6.4 acquire comprehension of the different diseases affecting dairy cows.	3.4.6.4.1 name diseases affecting dairy cattle 3.4.6.4.2 state the causes of the diseases 3.4.6.4.3 identify an animal suffering from the chosen disease 3.4.6.4.4 describe the symptoms, treatment, control and preventive measures against mastitis and milk fever.
Milking the cows:	3.4.6.5 acquire knowledge on the different methods of milking cows and the various methods of treating milk.	3.4.6.5.1 state measures necessary for good hygiene in a milking parlour 3.4.6.5.2 state the advantages and disadvantages of hand and machine milking 3.4.6.5.3 describe the type of preparations necessary before milking cows 3.4.6.5.4 describe the handling of milk to maintain its quality 3.4.6.5.5 differentiate between pasteurization and sterilization of milk 3.4.6.5.6 state the reasons for pasteurization and sterilization of milk 3.4.6.5.7 describe how sour milk is made (traditional and modern).
Marketing of milk and milk products	3.4.6.6 acquire knowledge on the different milk products and their marketing.	3.4.6.6.1 describe the forms in which milk is marketed 3.4.6.6.2 identify the milk products in the market 3.4.6.6.3 describe the processes of converting milk to other products.

<b>3.4.7 SHEEP/ GOAT (choose one from the two small stock)</b>		
<i>Topics</i>	<i>General Objectives</i>	<i>Specific Objectives</i>
	<b>The learners should be able to:</b>	<b>The learners should be able to:</b>
Sheep and Goat Production	3.4.7.1 acquire knowledge on the different breeds of sheep/goats.	3.4.7.1.1 name breeds of the chosen animal 3.4.7.1.2 identify the breeds of the chosen animal 3.4.7.1.3 describe the breeds of the chosen animal in terms of their characteristics 3.4.7.1.4 classify the named breeds of animals according to their uses.
	3.4.7.2 acquire knowledge and appreciation of the importance of providing housing, water, feed and the types of feed suitable for sheep / goats.	3.4.7.2.1 state the significance of housing when raising sheep / goats 3.4.7.2.2 name the types of feeds suitable for sheep/goats 3.4.7.2.3 identify the appropriate feeds for sheep / goats 3.4.7.2.4 explain the reasons for providing food and water regularly to sheep/goats.
	3.4.7.3 develop the management skills sheep/goat.	3.4.7.3.1 demonstrate castration, deworming, hoof- trimming, and vaccination 3.4.7.3.2 state the reasons for castration, deworming, vaccination, hoof- trimming and identification 3.4.7.3.3 identify tools used for castration, deworming, hoof- trimming and vaccination 3.4.7.3.4 describe the following procedures: castration, hoof- trimming, deworming, vaccination and identification.
Parasites and Animal Diseases	3.4.7.4 acquire knowledge on the control of parasites of sheep/goats.	3.4.7.4.1 identify internal and external parasites affecting sheep/goats 3.4.7.4.2 describe the life- cycle of one common parasite of sheep/goats 3.4.7.4.3 describe the effects the parasite under study have on the host animal 3.4.7.4.4 suggest ways by which the parasite under study can be controlled or prevented 3.4.7.4.5 demonstrate the chemicals control of parasites under study.
	3.4.7.5 acquire knowledge on diseases affecting the chosen animals.	3.4.7.5.1 identify the diseases affecting the animals 3.4.7.5.2 describe the cause, symptoms, treatment, control and preventive measures against diseases of the chosen animals 3.4.7.5.3 demonstrate the chemical control methods of diseases affecting animals.

Marketing	3.4.7.6 acquire skills of processing and marketing of different products and by-products obtained from sheep/goat.	3.4.7.6.1 describe the products and by-products of sheep/goats 3.4.7.6.2 demonstrate the processing of sheep/goat products 3.4.7.6.3 demonstrate the marketing of the chosen animals' products and by-products.
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