



Ministry of Education
and Sports

HOME-STUDY LEARNING

SENIOR
2

AGRICULTURE

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This material has been developed as a home-study intervention for schools during the lockdown caused by the COVID-19 pandemic to support continuity of learning.

Therefore, this material is restricted from being reproduced for any commercial gains.

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FOREWORD

Following the outbreak of the COVID-19 pandemic, government of Uganda closed all schools and other educational institutions to minimize the spread of the coronavirus. This has affected more than 36,314 primary schools, 3129 secondary schools, 430,778 teachers and 12,777,390 learners.

The COVID-19 outbreak and subsequent closure of all has had drastically impacted on learning especially curriculum coverage, loss of interest in education and learner readiness in case schools open. This could result in massive rates of learner dropouts due to unwanted pregnancies and lack of school fees among others.

To mitigate the impact of the pandemic on the education system in Uganda, the Ministry of Education and Sports (MoES) constituted a Sector Response Taskforce (SRT) to strengthen the sector's preparedness and response measures. The SRT and National Curriculum Development Centre developed print home-study materials, radio and television scripts for some selected subjects for all learners from Pre-Primary to Advanced Level. The materials will enhance continued learning and learning for progression during this period of the lockdown, and will still be relevant when schools resume.

The materials focused on critical competences in all subjects in the curricula to enable the learners to achieve without the teachers' guidance. Therefore effort should be made for all learners to access and use these materials during the lockdown. Similarly, teachers are advised to get these materials in order to plan appropriately for further learning when schools resume, while parents/guardians need to ensure that their children access copies of these materials and use them appropriately. I recognise the effort of National Curriculum Development Centre in responding to this emergency through appropriate guidance and the timely development of these home study materials. I recommend them for use by all learners during the lockdown.



Alex Kakooza
Permanent Secretary
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ACKNOWLEDGEMENTS

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The Centre appreciates the contribution from all those who guided the development of these materials to make sure they are of quality; Development partners - SESIL, Save the Children and UNICEF; all the Panel members of the various subjects; sister institutions - UNEB and DES for their valuable contributions.

NCDC takes the responsibility for any shortcomings that might be identified in this publication and welcomes suggestions for improvement. The comments and suggestions may be communicated to NCDC through P.O. Box 7002 Kampala or email admin@ncdc.go.ug or by visiting our website at <http://ncdc.go.ug/node/13>.



Grace K. Baguma
Director,
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ABOUT THIS BOOKLET

Dear learner, you are welcome to this home-study package. This content focuses on critical competences in the syllabus.

The content is organised into lesson units. Each unit has lesson activities, summary notes and assessment activities. Some lessons have projects that you need to carry out at home during this period. You are free to use other reference materials to get more information for specific topics.

Seek guidance from people at home who are knowledgeable to clarify in case of a challenge. The knowledge you can acquire from this content can be supplemented with other learning options that may be offered on radio, television, newspaper learning programmes. More learning materials can also be accessed by visiting our website at www.ncdc.go.ug or ncdc-go-ug.digital/. You can access the website using an internet enabled computer or mobile phone.

We encourage you to present your work to your class teacher when schools resume so that your teacher is able to know what you learned during the time you have been away from school. This will form part of your assessment. Your teacher will also assess the assignments you will have done and do corrections where you might not have done it right.

The content has been developed with full awareness of the home learning environment without direct supervision of the teacher. The methods, examples and activities used in the materials have been carefully selected to facilitate continuity of learning.

You are therefore in charge of your own learning. You need to give yourself favourable time for learning. This material can as well be used beyond the home-study situation. Keep it for reference anytime.

Develop your learning timetable to cater for continuity of learning and other responsibilities given to you at home.

Enjoy learning



Term 1**TOPIC 1: CROP PRODUCTION PRACTICES****Lesson 1: Preparing a Seed Bed****Learning outcome**

By the end of the lesson, you should be able to prepare a seed for growing a crop.

Materials that you will need in this lesson.

hand hoe, piece of land

Introduction

In Senior one, you learnt about crops, the different groups, their importance's and the different farming systems where growing of crops is involved. We want to see how to prepare land for crop growing. Seed bed is that piece of land prepared to receive planting materials. These can be seeds, plant parts or vegetative material and seedlings.

For you to produce high quality crop yields, the garden should be prepared well before planting. Some crops need fine filth while others can grow in a roughly prepared garden. Do you know the crops that need a fine tilth, have you planted any of them? Do famers in your community prepared their land well before planting? The steps involved include, removal of vegetation, Primary and Secondary Cultivation or tillage

Activity 1

1. Identify a piece of land to prepare it for crop growing.
2. Write down the steps you will follow while preparing the land.
3. Name the benefits and challenges of preparing the land before planting.

Summary

In this lesson, we have learnt that:

1. A seedbed is a piece of land prepared to receive planting materials
2. Some crops require a fine tilth while others a rough tilth
3. There different steps involved in preparing a seedbed namely bush clearing, stumping,
4. Primary cultivation and secondary cultivation

Lesson 2: Nursery Bed Preparation**Learning outcomes**

By the end of the lesson, you should be able to:

- i) identify a good place for a nursery bed.
- ii) correctly use the tools and materials needed when preparing a nursery bed.
- iii) prepare a good nursery bed prepare a seed for growing a crop.

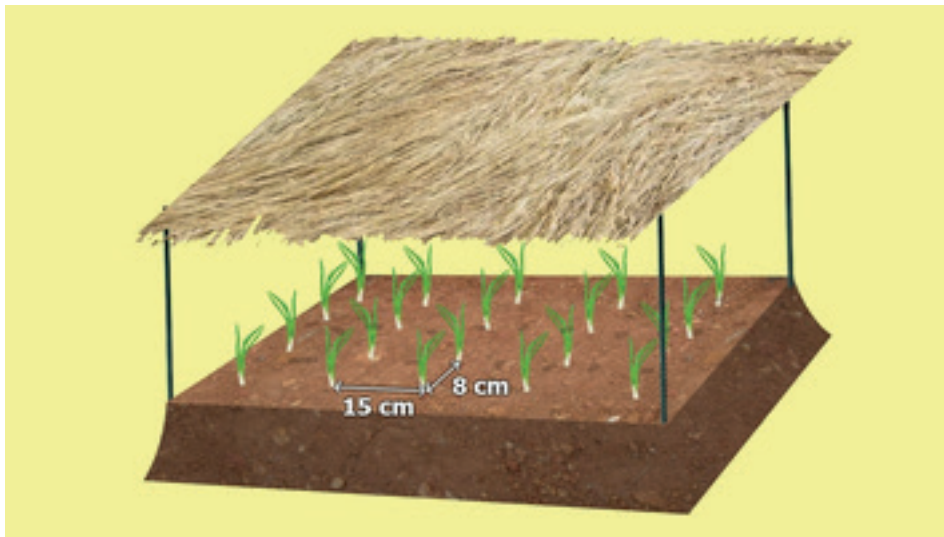
Materials that you will need in this lesson

Soil, hand hoe, string, sacs, sticks

Introduction

In lesson 1, you learnt about how to prepare a seed bed. Have you seen people preparing nursery bed? How about for profit making? There are various crops that need to be put in a nursery bed for them to grow well before they are taken to the main garden.

Can you name some of the crops which are planted in a nursery bed? A nursery bed is a place or small garden for raising or handling of young seedling until they are ready for permanent planting. It acts as a temporary home for young plants until they are transplanted to the main / permanent garden. There are different types or ways of preparing a nursery bed. It can be raised on the ground, garden, seed boxes filled with soil and soil block where soil is put in polythene / sac. There tools and materials which are used to prepare the nursery bed, can you name some?



Activity 1

1. Can you identify and name the difference in the Pictures above?
2. Which method can you use to prepare a nursery bed and why?
3. Prepare a nursery bed ready to receive planting materials
4. Suggest materials you can use to provide a shade to the nursery bed

Summary

- A nursery bed is a small piece of land prepared to receive seeds.
- A nursery bed is prepared to provide ideal conditions for raising strong and healthy plants.
- There different tools and materials needed when preparing a seed bed and this depends on the type of nursery you have selected.
- A nursery bed can be raised, seed box or soil block.
- Steps in making a nursery include: clearing grass, measurement, digging it well, sterilizing, add fertilizer and watering before planting.

Lesson 3: Seed Selection

Learning outcomes

By the end of the lesson, you should be able to select the right seed for planting.

Materials that you will need in this lesson.

garden tools, seeds

Introduction

Planting Materials are any materials used to propagate Plants. Propagation in the process of increasing plant population only good planting materials should be planted. Have you ever planted seeds? How did you select them? Good planting materials are essential to grow strong and healthy crops. Health seeds can be bought from trusted sources or farmers can produce their own seeds. Seed selection is a basis used to improve quality of seeds. Seed selection should start by obtaining seeds from health plants.

Planting material may be in two forms namely, seeds and vegetative plant parts such as cuttings, slips, root stock, suckers tissue, buds, leaves. Disease, pest heat or cold can kill the seed embryo hence leading it not to germinate. Available seed is that capable of germinating under suitable conditions.

Activity

Identify and Collect the different types of planting material in your community.

Group them into different forms.

Select one planting material to grow and give reasons why?

Summary

There are two forms of Planting material namely seed and vegetative, Heat and cold can kill the embryo leading to no germination.

Term 2

TOPIC 1: CROP PRODUCTION PRACTICES

Lesson 1: Planting selected crop

Learning outcome

By the end of the lesson, you should be able to plant a selected a crop.

Materials that you will need in this lesson:

garden tools, selected planting material, prepared soil

Introduction:

Have you ever planted any crop? How many seeds did you plant per hole?, what was the depth and which method did you use? There are various methods of planting namely; row planting, broadcasting and drilling. Seeds can be planted by hands or tools. In modern methods, seeds can be planted using machines such as tractors.

Broadcasting is where seeds are scattered randomly on the soil surface and mainly used in small seeds like millet or simsim. Row planting involved planting seeds in straight line while drilling is where sowing is done by iron drills connected to a tractor.

Planting depth is how deep the plant material or seed are put in the soil. The depth of planting in the soil is proportioned to the size. Crops must be planted in the right time to benefit from the rains in the season. Crops should be spaced properly; this is the distance between crops or from hole to another garden. This will depend on the crop

Activity

1. Using the crop selected, give the method you are going to use to plant and the right spacing. Give reason for your selection
2. Plant the material using the selected method and spacing

Summary

1. There are three methods of planting crops namely row, broadcasting and drilling method...where is the third Method?
2. Planting depth and spacing are key practices when planting any crop to produce healthy and high yields.

Lesson 2: Caring for Seedling in the Nursery bed

Learning outcome

By the end of the lesson, you should be able to care for seedlings in the Nursery bed.

Materials that you will need in this lesson:

garden tools, nursery bed with a crop planted

Introduction

Caring for seedlings in the nursery bed involves watering which is done two times daily in the morning and evening to reduce evaporation. It is important because seeds need moisture to germinate. Why do you think a watering can, is good for watering seedlings?

Thinning is another practice which is the removal of some seedlings to provide seedlings with enough space between each other so as to grow well. What happens to the seedling you have removed?

Weeding is also done to remove unwanted plants from the nursery.

Control of pests and diseases is done to increase yields and quality of seedlings.

Hardening off is also done where seedlings get used to the garden conditions such as rain and sunshine by reducing the shade slowly from the nursery bed.

Activity 1

1. Select a material you are going to use for watering and describe how you will use it, why you have used that and give its challenges.
2. Carry out the practices done when caring for seedlings in the Nursery bed.

Summary

There several practices which should be done in order to have healthy seedlings for your own planting and for sale. They include weeding, watering, thinning, pest and disease control and hardening off.

Lesson 3: Caring for Crops in the Garden

Learning outcome

By the end of the lesson, you should be able to care for crops in the garden.

Materials that you will need in this lesson.

garden tools, crop garden

Introduction

Have you ever planted a crop and you see other plants growing within that garden which you did not plant? Did you remove them, how?

Weeds are plants growing where they are not wanted. Can you give examples of such crops? These can be *black jack*, *wandering jew*, *oxalis*, *couch grass*. These plants affect crop growth, yields and increase costs of production when controlling. However, some can be of importance to the farmer. Do you know any? They provide organic matter, feeds and medicine.

Weeds can be controlled by use of cultural, mechanical, and biological methods or by use of chemicals. When using chemicals, precautions must be observed.

Activity 1

1. Look around for any container that contains a chemical.
Write down its name, expiry date and precautions to be taken when using the chemical.
2. Which method can you use to control weeds in your garden and why?
3. Carry out weeding in your crop growing using the selected method

Summary

1. Weeds are unwanted plants in the garden
2. There are several examples of weeds such as oxalis, wandering Jew, blackjack, spear grass, couch grass and many more.
3. Weeds can provide feeds, food, medicine and organic matter
4. Weeds can be controlled using cultural, mechanical, biological and chemical methods.

Lesson 4: Fertilizer Application

Learning outcome

By the end of the lesson, you should be able to apply fertilizer to the crops in the garden.

Materials that you will need in this lesson;

garden tools (bucket, watering can, gloves, etc.), crop garden, fertilizer, water

Introduction

Did you know that crops also need food to boost their growth? Have you ever given food to crops?

In your S.1 you studied about plant nutrients which are food for plants. But as we continuously grow crops, they take away all the nutrients and we need to keep adding for the crops to grow well. Fertilizers are any material which when applied to the soil supply desired plant nutrients.

Fertilizers are of two types, organic which is from plant remains and inorganic which is manmade.

There are several ways of making organic fertilizers namely compost manure, farm yard manure, green manure and mulches. The inorganic fertilizers exist in several forms, some are added to the soil direct and others are mixed with water and sprayed in the garden. They include Urea, NPK, DAP, CAN.

Activity 1

1. Identify one of the organic fertilizer methods and make one to be applied in your crops. Give a reason why that method and its challenges.
2. Apply the material into your garden

Summary

1. Fertilizers are any material which when applied to the soil supply desired plant nutrients.
2. Fertilizers are of two types, organic which is from plant remains and inorganic which is man-made.
3. Organic fertilizers have types namely compost manure, farm yard manure, green manure and mulches.
4. The inorganic fertilizers are added to the soil direct and others are mixed with water and sprayed in the garden.

Lesson 5: Control of Pests and Diseases

Learning outcome

By the end of the lesson, you should be able to control pests and diseases in the crop garden.

Materials that you'll need in this lesson

garden tools (sprayer, water can, gloves, etc.), crop garden, pesticides, nematicides, bactericides, fungicides, etc., water

Introduction

Have you ever seen any damage on the crop growing? On which part of the plant was the damage?, What do you think caused the damage?

Pests and diseases are the major cause of damage on the crops. Pests are organisms that cause damage to growing and stored crops. These include aphids, locusts, moth and birds. They affect the crop by biting, chewing, burning, sucking and defoliations.

Diseases are a result of some disturbance in the normal life process of the plant. They may be a result of living and non-living causes, namely fungi, bacteria, virus or lack of nutrients.

Pests and diseases affect all plants at some stage of their lives. They should be controlled early enough to avoid losses. They can be controlled by cultural, physical, biological, chemical or integrated measures.

Activity

In your community, find out some of the pests, give their names, how they damage the crop and how it can be controlled

Summary

1. Pests and diseases cause damage to crops leading to poor quality low crop products
2. Crop pests include, aphids, birds, locusts, termites, moths and many more,
3. Pests damage crops by chewing, biting, boring, sucking and defoliation
4. Diseases may be caused by living or non-living organisms such as fungi, bacteria, virus and lack of some nutrients
5. Pests and diseases can be controlled by cultural, physical, biological and chemical methods

Lesson 6: Harvesting of Crops

Learning outcome

By the end of the lesson, you should be able to;

- i) identify crops ready for harvest.
- ii) use tools for harvesting appropriately.
- iii) harvest the mature crops.

Materials that you will need in this lesson

crop in the garden, harvesting tools(knife, sickle, panga), collection equipment (bags, bucket, tins, tarpaulin)

Introduction

Have you harvested a crop, what signs showed that it was ready for harvest, which tools did you use to harvest, which involves cutting of mature crops and gathering them. It can be done manually by using a sickle, knife or by machine called harvester, depending on the crop. This marks the end of the growing season.

Each crop has its signs that it shows when ready for harvest like tomatoes become red and soft.

Crops like vegetable are harvested fresh while cereals are dried before being stored to reduce the moisture content.

Activity

1. In your community, find out how different crops are harvested and tools used.
2. Write down the tools used when harvesting a crop of your choice
3. Harvest the crop you planted using any method

Summary

Harvesting is the process of gathering ripe crop from the field which marks the end of growing season.

It can be done manually by using a sickle, knife or by machine called harvester, depending on the crop.

Crops should be harvested as early as soon as they show signs of ripening to minimize loses.

Lesson 7: Processing of Harvested Crops**Learning outcome**

By the end of the lesson, you should be able to:

- i) prepare harvested crops for processing and storage.
- ii) process crop into different crop products.

Materials that you will need in this lesson.

harvested crop, processing material, packaging material

Introduction

In your community all the crops that are harvested are not eaten fresh. As time goes by after harvest, they will start to reduce in quality and quantity that is why we have to change these harvests into other forms so as to increase shelf life or maintain quality by drying them. It is one way of adding value to the crop products. Have you seen people in your community preserving vegetables, or fruit how did they do it? They can be dried or kept under cold conditions. While cereals and legumes must dry properly before they are stored

Activity

Identify one crop in your community and find out how it can be processed into forms.
Process one crop of your choice and package it.
Give the reason for your crop choice of challenges faced during processing.

Summary

Processing is the performance of series of mechanical or chemical operations in order to change or preserve the harvested products.
Harvested crop products are processed to increase their value or shelf life
Crops can be dried, pounded or changed into other forms



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