TEACHERS NAME. TSC NO.

SCHOOL/INSTITUTION

FORM: TWO

SUBJECT: AGRICULTURE TOPIC: SOIL FERTILITY II (INORGANIC FERTILIZERS)

SUB TOPIC: MACRO-NUTRIENTS

WEEK: TWO LESSON NO: ONE

DATE. TIME

OBJECTIVES:

At the end of the lesson the learner should be able to:

At the end of the lesson the learner should be able to:

1. Describe the source of the plant nutrients
2. Name the broad categories of the plant nutrients
3. Name the major nutrients required by the plants in large quantities
4. Discuss the fertilizer elements and the liming elements required by the plants

TIME	CONTENT	LEARNING ACTIVITIES	RESOURCE MATERIALS
5 Mins 30 Mins	**Introduction** Introduce the lesson by briefly explaining to the learners the content of the topics the mode of coverage of the topic and the objectives to be achieved by the end of the chapter coverage.. **Lesson development** <u>Step 1</u> Describing the broad categories of the plant nutrients; **Introduction** • Plant nutrients occur in the soil in form of soluble substances. • These substances are taken in by the plants in different quantities depending on their roles in the plant	Description of terms Asking and answering questions Description Naming Discussion	KLB Agriculture book two page 1 Test and fix it KCSE revision agriculture Certificate secondary agriculture book two

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	tissues. ***Essential Elements*** • These are nutrients needed by plants for various uses. • They are divided into two broad categories namely: ➢ Macronutrients ➢ micronutrients <u>Step 2</u> Naming the major nutrients required by the plants; ***Macro-nutrients*** • These are also referred to as major nutrients. • They are required by the plant in large quantities. ***They include;*** • carbon, • hydrogen, • oxygen, • nitrogen, • phophorus, • potassium, • sulphur, • calcium • magnesium <u>Step 3</u> Discussing the fertilizer elements and the liming elements required by the plants; • nitrogen • phosphorus • potassium	Explanation Discussion Questions Description	Chalk board KLB agriculture book two page 1 Class notes Text book Chalk board
5 Mins	**Conclusion** Review the lesson by briefly explaining the main categories of the plants nutrients, naming the major nutrients by the plants and the fertilizer elements and the liming elements required by the plants.	Definition of terms Questions and answer	KLB agriculture book two page 1 Longhorn secondary agriculture book two page 1

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TEACHERS NAME.TSC NO.

SCHOOL/INSTITUTION

FORM: TWO

SUBJECT: AGRICULTURE TOPIC: SOIL FERTILITY II (INORGANIC FERTILIZERS)

SUB TOPIC: NITROGEN

WEEK: TWO LESSON NO: TWO

DATE.TIME

OBJECTIVES:

At the end of the lesson the learner should be able to:

1. Explain the various forms in which nitrogen occurs
2. Discuss the role of nitrogen in plants
3. Describe the symptoms of nitrogen deficiency in plants

TIME	CONTENT	LEARNING ACTIVITIES	RESOURCE MATERIALS
5 Mins 30 Mins	**Introduction** Introduce the lesson by briefly explaining the main categories of the plants nutrients, naming the major nutrients by the plants and the fertilizer elements and the liming elements required by the plants. **Lesson development** <u>Step 1</u> Explaining the forms in which nitrogen occurs; **Nitrogen**.(**$N0_3^-$, $NH4^+$)** Its sources are; artificial fertilizers, organic matter and atmospheric fixation by lightning and nitrogen fixing bacteria. <u>Step 2</u> Discussing he role of nitrogen in plants; ***Role of nitrogen in plants*** 1. Chlorophyll formation making the plant succulent deep green in colour. 2. Encourages vegetative growth especially in crops where leaves are harvested e.g. kales, Cabbages and pasture grasses. 3. Protein formation and protoplasm of all living cells. 4. Regulates the availability of phosphorous and potassium in plants.	Description of terms Asking and answering questions Description Naming Discussion Explanation	KLB Agriculture book two page 1 Test and fix it KCSE revision agriculture Certificate secondary agriculture book two Chalk board

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5 Mins	5. Increases the size of grain cereals and their protein content. <u>Step 3</u> Escribing the nitrogen deficiency symptoms in plants; ***Deficiency symptoms*** 1. Chlorosis or yellowing of the leaves. 2. Production of anthocyanin pigment instead of chlorophyll in tomatoes causing purplish colour. 3. Stunted growth where plants become dwarfed with extremely short roots. 4. Premature leaf fall. 5. Premature ripening of fruits. 6. Production of light seeds. ***Effects of excess nitrogen*** 1. Scorching of the leaves. 2. Delayed maturity. 3. Excessive succulence in stems hence fall/lodging. **Loss of nitrogen from the soil** 1. Soil erosion 2. Leaching 3. Volatilization 4. Crop uptake 5. Used by microorganisms **Conclusion** Review the lesson by briefly describing the forms in which oxygen exists in the soil, the role of nitrogen in the soil, symptoms of the nitrogen deficiency and the ways through which nitrogen is lost in the soil	Discussion Questions Description Definition of terms Questions and answer	KLB agriculture book two page 2 Class notes Text book Chalk board KLB agriculture book two page 2 Longhorn secondary agriculture book two page 2-3

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