443/3
AGRICULTURE PROJECT
Jan. - July 2025
(Declaration form)

THE KENYA NATIONAL EXAMINATIONS COUNCIL

Kenya Certificate of Secondary Education

443/3 AGRICULTURE PROJECT REPORT

DECLARATION BY CANDIDATE

This is to certify that this is a true project report of my Agriculture Project and that it contains the details of the operations.

Name of the Candidate	Index No.	Signature
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Enter the score awarded in the box below.

Agriculture Teacher	19

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GROUP 2

GRAFTING OF AVOCADO
(PERSEA AMERICANA)
FRUIT TREES

Grafting of avocado fruit trees (Persea americana)

Introduction

Grafting is the practise of uniting two separate woody stems, a scion and a rootstock to grow as one plant.
The scion which is the top part should be able to produce high quality and quantity fruits in accordance to the farmers choice and preference.
The rootstock which comprises of the roots should have good desireable features such as; disease resistance, good rooting system among many others.
Both the rootstock and scion used for grafting should be highly compatible to achieve successive grafting/union
Grafting is an important horticultural technique as it:
Facilitates the shortening of a plants maturity rate.
It makes it possible to grow more than one type of fruit on the same plant
It facilitates changing of the top part of a tree from being undesireable to being desireable
It facilitates use of plants with desireable root characteristics. such as disease resistant but produce undesireable fruits to produce high quality fruits.

2. Identification of issues

I observed that within my school community, students only ate avocado fruits twice in a week while it is advisable to eat fruits on a daily basis.
As a result of this, most students were suffering from diseases such as; unhealthy skin, obesity, hypertension among other diseases.

I also observed that most fruit farmers around my school had low income as a result of producing low quality avocado fruits by their avocado fruit trees
This also led to a shortage of fruits both within and around my school community hence contributing to people suffering from health diseases such as; obesity, hypertension among many other diseases
I therefore opted to solve these problems by grafting avocado fruit trees.
I chose avocado fruit trees as the avocado fruit is scientifically proven to prevent diseases which my community members were suffering from.
Grafting would also help the farmers to produce fruits of their tastes and preference which are of high quality
As a result, their fruit demand would increase in the market hence enabling them to earn more income

Objectives

The project objectives are:
To fulfil KNEC's 2025 project requirement.
To be able to carry out grafting of avocado fruit trees
To address the shortage of fruits through grafting of avocado fruit trees
To understand the factors and conditions required for one to carry out successively grafting
To practice the theoretical knowledge on grafting learnt in class
To carry out the avocado grafting practice and project report writing for my KCSE examination

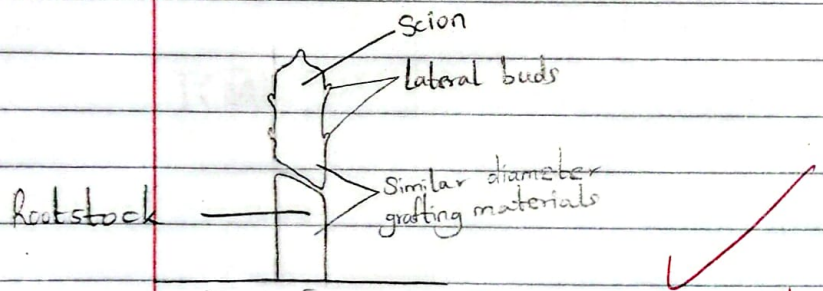
Project description

We decided to graft indigenous avocado seedlings with hass tree species of avocado fruit trees together with my group members

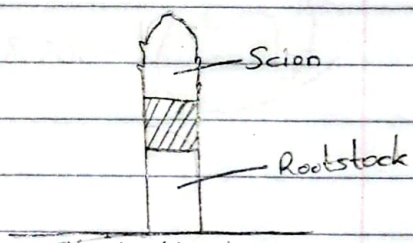
My group members and I choose whip grafting method from other methods such as; cleft grafting method, side, notch and many more grafting methods

This was because whip/tongue/splice grafting method is the simplest and easiest method of grafting

It requires both the rootstock and scion to be of equal diameter which is pencil thick



Tongue method of grafting



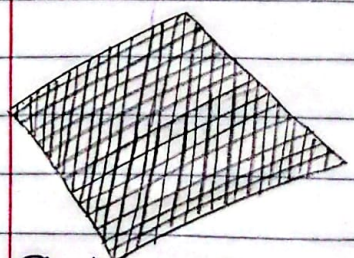
Grafted plant (Tongue grafting method)

Tools and materials used during grafting

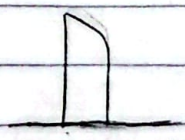
Tools and materials used to carry out grafting include:

A scapel

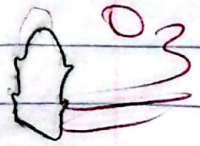
Grafting tape



Shadingnet



Rootstock



Scion

Project budget

Materials $	Quantity	Unit cost	Total cost (Ksh)
Scapels	5	10	50
Watering can	1	400	400
Grafting tape	20	20	400
Rootstock	20	100	2000
Scion	20	10	200
Steriliser	10 ml	150	150
Shadenet	5m x 10m	3000	3000
Rake	1	350	500
Trainer	1	1500	1500
TOTAL			8,200

Project implementation plan and timelines.

The following is an analysis on the project implementation plan

Activities	J	F	M	A	M	J	J	A	S	O	N	D
Introduction of project												
Identification of issue												
Individual presentation of the project												
Preparation of a budget plan												
Group presentations of the project												
Site selection												
Servicing and preparation												
Training Session with grafting expert												
Forbright report on the project												
Evaluation of the project												
Watering, inspection												
Report writing												

Project implementation procedures

On the 12th of February, our agriculture teacher issued us our agriculture projects and instructed us to choose between:
Construction and mounting of a beehive
Grafting / budding of fruit trees
She instructed us to identify problems either within and around our community that would be solved by either of the two
I observed that most people were suffering from various health problems such as unhealthy skin due to inadequate supply of fruits
Farmers around my school also had poor income flow due to their fruit trees producing poor quality fruits which had low demand hence their income was affected
I hence resolved to choose grafting of avocado trees
Our agriculture teacher told us to write down the problems and how the project we had choosen would solve the various problems we identified
She later took videos of us presenting our problems and how the project identified would resolve it to our community
She placed us in groups of upto five members
We were told to discuss the project as a group
Group two members and I identified two major problems that would be solved through grafting;
Poor nutrition
Aerosion
We presented our findings as a group which the teacher also recorded.

07

Training sessions

An agricultural trainer was invited to our school and he came and taught us practically how to graft and the conditions required for successful grafting.

Collecting tools / materials

My group members and I were given grafting tapes scapels and were told to practically graft the trees
We used whip method of grafting as it was the simplest
We all helped each other carry out the activity by consulting amongst ourselves

Selecting locations for planting

Each group was given a 1m x 1m plot of land and we elected a shade over our plots

Performing grafting

~~We~~
Each student was given a seedling and tools for grafting
We used tongue grafting; the rootstock and scion were of same diameters
We made a central vertical cuts on the rootstock
We made wedge shaped cuts on the scion then tapered it on the side which was cut
Both the cut on the rootstock and scion were one inch to ensure they were in contact for success
Scion was inserted into the rootstock
We tied the grafted part using an inorganic grafting tape
We tied the grafted part tightly to ensure the two plants had close contact

Maintaining growth progress and caring for plants

We placed the grafted trees under a shade and watered them regularly; my group members and I all took turns in watering weeding and accounting for any abnormalities, example, drien of scion

Our trees sprouted as the lateral buds sprouted to form leaves after 8 - 9 weeks
We continued to nourish the trees until we transplanted them to the main field

Reflection / evaluation

Our project was 99% successful as only two of our grafted trees failed to sprout
We were successful as we used plants of equal diameter
We also provided a set of favourable conditions for grafting such as regular watering, shading to avoid dring up of the scion
The two unsuccesfully grafted fruit tree seedlings might have been exposed to direct sunlight before shading

Conclusion

My group members and I were able to successfully carry out grafting practically
I became aware of the conditions required for grafting to be done
I was able to fulfil KNEC's 2025 project requirement
I was able to shorten the maturity rate of the grafted fruit seedlings
My group members will be able to train our fellow students practically how to graft trees and we shall graft trees both within and around our community
After some time, this trees will later produce high quality and quantity avocado fruits
This will help solve the problems we identified such as malnutrition

Recommendations

I would request learners to learn how to practically carry out grafting.
To enable them to produces more than one variety of fruit on one plant
To facilitate the fruit trees around them to produce high quality fruits
My community members should embrace the growing of grafted fruit trees as they take short period to reach maturity
Grafting also increases productivity and results in production of high quality fruits