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
Njuguna Joan Wairimu	11241001217	

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Enter the score awarded in the box below.

Agriculture Teacher | 19

MARY LEAKEY GIRLS' SCHOOL
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ACADEMIC

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GROUP 4

GRAFTING AVOCADO

FRUIT TREES (Persea americana)

INTRODUCTION.

Grafting is the technique of uniting two seperate woody stems of different plants. In other words, it involves joining of two parts of a plant, the scion and the rootstock, and encouraging them to form one plant. The rootstock forms the base having a rooting system while the scion is the upper part of the seedling. The scion and rootstock must be of the same species to ensure compatibility. As an agricultural practise, grafting is beneficial as it is known to; repair damaged trees, facilitate changing of the top of the tree from being undesirable to desirable, help propagate clones that cannot be propagated in any other way and many others.

IDENTIFICATION OF THE ISSUE.

The pressing problem we were able to identify through keen analysis and survey within the community was that avocado fruit trees (Persea Americana) takes very long time to mature into a fruit bearing adult plant. Through further research, we were able to know that grafted avocado fruit trees take a shorter time to mature as compared to avocado fruit trees propagated from seed. Therefore, grafting solves our problem by shortening the maturity period of avocado fruit trees. Additionally, this will increase the availability of fruits in the community. This is efficient as it helps in keeping the nutritional health of the people in check. This is because avocados are known to contain some vital vitamin which boosts the body's immunity hence reducing the vulnerability of individuals to mild diseases such as flu which is brought about the constant change of weather influenced by changing climatic conditions globally.

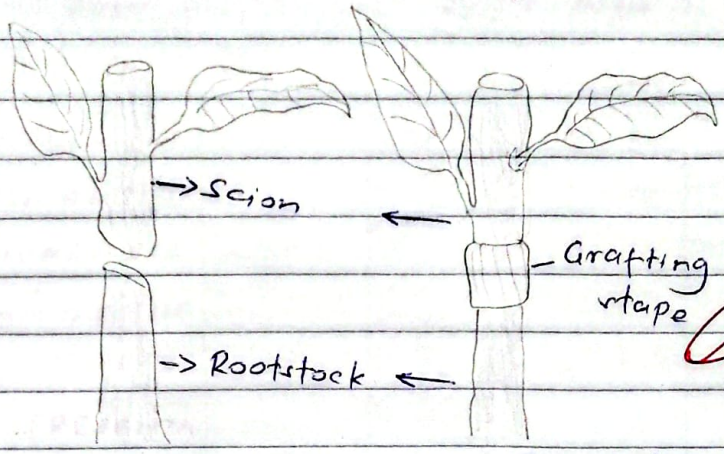
PROJECT OBJECTIVES.

1. To learn how grafting is done.

2. To aquire practical knowledge on how to carry out some of the routine management practises such as weeding, watering etc learnt in class.
3. To learn the precautions observed during grafting.
4. To practically learn the various grafting methods.
5. To produce successfully grafted avocado fruit tree seedlings.

PROJECT DESCRIPTION.

We started off by selecting the most suitable site where we would conduct our project. We decided to chose the school farm. We also decided to carry out whip & splice grafting since it was the easiest and it involved less risks. We then went into the selection of the scion and rootstock which had to have a similar pencil-thick diameter for compatibility. The rootstock was also expected to have no physical deformities or any sign of pest and disease attack. This was important to ensure succeful grafting. The scion was also expected to be healthy and from the Persea Americana species of avocado. This was to ensure that the grafted plant will be high yielding, pest and disease resistant and produce fruits of high quality. The materials required for grafting were a sterilised scapel, rootstock, scion, disinfectant, watering can, secateurs and a shade net. Each group was allocated 20 pairs of rootstocks and scions and a piece of land measuring about 1m by 1m. As a group, each group member grafted three avocado fruit seedlings by making a vertical cut on the rootstock and fitting a wedge-shaped scion on the cut made. To enhance compatibility, we used grafting tape which we tied round to articulating parts. We ensured the tie was tight in order to prevent moisture and secondary infection from affecting the graft.



Grafted avocado fruit tree seedling (whip grafting)

BUDGET.

The budget plan prepared was as follows:

Material	Quantity	Unit cost	Total cost
Scapel	5	10	50
Watering can	1	400	400
Grafting tape	20	20	400
Rootstock	20	100	2,000
Scion	20	10	200
Steriliser	10ml	150	150
Shade net	5m x 10m	3000	3000
Rake	1	350	500
Trainer	1	1500	1500
	Total cost		8,200 /=

GROUP MEMBERS

1. Caroline Nyambura.
2. Joan Njuguna.
3. Tracy Mideva Mungiomo.
4. Cynthia Rumui Njeri.
5. Manon Valentine Wainuku.

PROJECT IMPLEMENTATIONS PLAN AND TIMELINE.

ACTIVITY	J	F	M	A	M	J	J
INSTRUCTIONS OF THE PROJECT ISSUERANCE.							
IDENTICATION OF THE WUE.							
INDIVIDUAL PRESENTATION OF THE PROJECT							
PREPARATION OF A BUDGET PLAN.							
GROUP PRESENTATIONS OF THE PROJECT.							
SITE SELECTION							
ARRIVAL OF AVOCADO FRUIT TREE SEEDLINGS.							
PREPARATION OF NURSERY PLOTS.							
TRAINING SESSION WITH GRAFTING EXPERT.							
FORTNIGHT REPORT ON THE PROJECT.							
EVALUATION OF THE PROJECT.							
WATERING AND INSPECTION.							
REPORT WRITING.							

PROJECT IMPLEMENTATION AND PROCEDURE.

Training session – This was done by a grafting expert (an external trainer) sourced by the school from an agricultural research centre.

Assembling tools – The necessary equipments that were needed for grafting were sourced from a reliable source to prevent transmission of disease eg the rootstock and the scion.

Selection of location for planting → The requirement for the site for grafting was that it was to be a well shaded place, slightly sloping and a well secured place. The site had to also be near a water source that will ensure easy watering of the seedlings. We chose a section of the school farm that suited all the requirements perfectly. The nursery plots were established and a shade net erected over the seedlings to protect them from dehydration.

Performing grafts – We did the actual grafting in groups of the avocado fruit trees. Each member grafted three avocado fruit trees taking guidance from the external trainers and the teachers as one of us took a short video of the activity.

Monitoring growth progress (Post operations) – We conducted daily inspections as group members. We had formed a schedule to ensure that seedlings were well monitored and checked on everyday. This was to ensure good results.

Caring for the plants – 95% of our seedlings were able two survive. This was because of the continued watering and weeding that was done to provide the seedlings with best conditions for growth. We also destroyed pests that were found attacking our seedlings. The group members tried their best to give the best care to plants for optimum growth.

EVALUATION.

After careful evalution, we identified that our project was successful since 95% of the grafted avocado fruit tree seedlings had sprouted. This means that out of the twenty fruit tree seedings, eighteen had sprouted. One of the two defective ~~since~~ one had suffered from leaf blight which we suspected was because we had used overwater method of irrigation. From this, we learnt to use effective methods of irrigation such as drip irrigation. The other defective seedling had acquired a secondary infection due to poor tying of the grafting tape. From this we learnt to take the precautionary measures more seriously. However, we were able to sell three grafted avocado fruit tree seedlings to our school principal who decided to embrace our project. She acknowledged our good efforts and looked forward to the good results.

CONCLUSION.

Grafting as an effective agricultural technique is used to solve many problems such as the ones stated earlier and also many more. As a projectly it has greatly helped us to expand our theoritical knowledge by allowing us to implement it practically in the farm eg watering and weeding. Through grafting, we have also been taught how to use our knowledge not only in excelling in exams, but also curbing many day today issues in the society.

RECOMMENDATIONS.

Some of the recommendations passed by the group members were:

(a) Construction of more nursery plots to prevent overcrowding in one nursery plot, which could lead to competition for resources eg light
(b) Use of drip method of irrigation instead of overhead irrigation to prevent disease attack.
(c) Proper observation of grafting precautions.