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BUSITEMA UNIVERSITY ARAPAI CAMPUS FAUCULTY OF AGRICULTURE ANDANIMAL SCIENCE

AN INDUSTRIAL TRAINING REPORT CARRIED OUT AT KAPYOYON FARM IN SUAM SUBCOUNTY BUKWODISTRICT

16/05/2016 - 22/07/2016

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DATE OF SUBMISSION:--16---/--09--/2016

TO BE SUBMITTED TO THE DEPARTMENT OF AGRIBUSINESS AND EXTENSION FOR THE A WARD OF DIPLOMA IN CROP PRODUCTION AND MANAGEMENT

DECLARATION

I **Chemutai Gilbert** declare that this report is out of my own effort and it has never been submitted to any organization or institution for an award or use of other purpose.

This report is ready to be submitted

NAME: CHEMUTAI GILBERT

SIGN: ..... date 26/08/2016

APPROVAL

The report has been submitted under approval of the Sebei Elgon co-operative union management

Mr. CHEMISTO A. JOSEPH

Signature

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Date 26/08/2016.

DEDICATION

I put my gratitude and thanks to all those how have afforded to support me technically, financially socially, manually and others not mention like supervision. My parents, supervisor, teaching staff and non teaching staff

ACKNOWLEDGEMENT

Grateful acknowledgement is made to the following management of Sebei Elgon co-operative union, Nile breweries and agents for their permission to write report materials

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LIST OF ABBREVIATION

SECU.	:	Sebei Elgin-co-operative union
N.B.	:	Nile breweries
S.A.B.D.P.	:	South African barley demonstration plots
N.B.D.P	:	Nairobi barley demonstration plots
NARO.	:	National agricultural research organization
T	:	Treatment

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ABSTRACT

When I was in the field I was oriented around the farm by Mr. Ojara Geoffrey. My field supervisor Chebirwa Alex and they also explain to us about the organization of barley, pests and diseases that attack barley and their control measures. I Oslo participated in panting barley, fertilizer application and spraying witnessing the distribution of fertilizers to the farmer, checking of barley against pests and disease attack shown the different chemicals and their uses or effect on the crops growth. mixture of chemicals and when to be spray in the farm ,field making and opening of demonstration plots and training farmers about the different pests ,diseases and control measures up to the weeds .the report also contains the that I gained from the activities I carried out in the field conclusions and recommendations are also included in the report

CHAPTER ONE

1.0 INTRODUCTION.

These report summaries the activities carried out under barley, maize and beans productions in Kapyoyon farm during my industrial training

It also contains the impact of the activities, conclusions and recommendation s that can be seen in details in the course of the report

1.1 LOCATION OF THE FARM

It is located in Suam Sub-County Bukwo District 3km along Bukwo Suam Road. It is bordered by Kapterewa Sub-County to the East, Kenya to the south and Senendet Sub-County to the west. Historical background of Kapyoyon Farm, Kapyoyon Farm is one of the properties of SECU. The land was brought from a white man called **Linsey.** SECU requested as a Co-Operative Union in the year 1964, by that time there were only two asteriated primary societies from Kapchorwa, Kween and Bukwo but now SECU is made up of 52 affiliate primary societies from the above counties

By then the land was bought in the year 1969 maize and wheat was the main crop produced and a small extend of cattle rearing was done, coffee was also grown but in a small scale the total was under cultivation is 1260 acres but of recent in the year 2010 Nile breweries limited took over the farm with barley being produced and maize in small scale by the people who have land from them

1.2 OBJECTIVES OF THE SEBEI ELGON CO-OPERATIVE UNION (SECU)

The key objectives of SECU are enumerated as follows.

- To ensure food security
- To eradicate poverty
- To market agricultural products of the farm to the international market

CHAPTER TWO

2.0 INTRODUCTION

While I was in Kapyoyon Farm the main activities that I did were as follows

- Planting of barley
- Supervision of barley, beans and maize for pests, weeds, disease attack and abnormal growth
- Finding out the booting and heading percentage of barley in the demonstration plots and this are Nairobi plots south African demonstration plots and the NARO demo plots
- Spraying, fertilizer application
- Identifying most chemicals used in the farm among others.

2.1 BARLEY PRODUCTION

Site selection and preparation

The area should be open free from big trees and thick bush soil should be deep well drained and fertile

Plough land two-three times according to the soil conditions and presences of weeds to move the soils finely

Ecological Requirement

- Rainfall
- Fertile soils
- Temperatures.

2.2 ACTIVITIES DONE ON THE FIELD

2.2.1 Orientation

It was oriented around the farm and shown the different section of the farm like the store, office.etc crop store /input and output stores machinery stores and chemical stores security offices, and different plots that the farm consists of including Nairobi plots, south African plots and NARO plots which is about 285 acres that is Dip plots, Gate upper plots, Gate lower plots ,store plots ,central Nairobi A-G and Boma etc

2.2.2 Nairobi Plot

It's located in the east of farm. It's the largest plot of the farm which covers a total land area of 415acres

2.2.3 Central Plot

Its located in other in the northern part of the farm .it's the main plot that union cultivates among all other plots

Nile breweries haired a third of the total lands area and then the neighboring farmers haired the rest .the central plot covers189acres.

2.2.4 Gate Lower

Its located south of the farm and it covers allow area of 167acres and it is the only plot with a gentle slope terrain and its 90acres

2.2.5 Gate Upper

Its located at the central of the farm just opposite gate lower .it has a land of 10acres

2.2.6 gate lower

It's located at central part of the farm its where the machinery store is located it has a total land area of 89 acres

2.2.7 Store Plots

It's also located at the central part of the farm towards the east bordering Nairobi and gate lower to the west its where the inputs and outputs stores are located I.e. seeds, products fertilizers are stored it has a total land area of 27acres

The orientation was done by Mr. Chebirwa Alex

2.3 PLANTING BARLEY

We were given seeds by Ojara Geoffrey to plant in demonstration plots. He explain to me that seeds must be dry not rotten ,should be uniform in color and of the variety we wanted to plant ,we also want to explain seeds should be sawn continuously at a content rate .if planted in line and uniformly broadcasted. It also went further to apply DAP fertilizers to the plants so my supervisors explanations here to be applied fast before putting the seeds and it should be planted with fertilizers were the soil is moist enough. Witnessing the distribution of fertilizers to the farmers how have taken the barley seeds from the farm .the fertilizers were given to farmers according to the proportion of seeds and size of land and every 40kgs seeds the will be given 50kgs of DAP fertilizers

2.4 MATURITY PERIOD

The crop matures within 3-4 month according to the varieties and environment conditions

2.5 HARVESTING

The crop is harvested when it is dry or has turn brown .it's then cut using sickles ,collected then beaten to obstruct the grains or can also be harvested by using a combine harvester .it can then be dried and stored or marketed by processing

2.6 HERBICITES

- Round up. it's a non selective herbicide used for clearing land pre-ploughing used for killing perennial weeds like nut grass, cough grass etc
- Radon super EW75 .it's a selective herbicide applied as post-emergence at two leave stage of weeds and its purposely for latria species of grass can kill black jack and other broad leaves grasses like guinea grass and wild finger millet
- Becator OD375. It's a selective herbicide used for killing broad leave weeds and some grasses and sedges
- Tiara. Applied as a pre-emergence non selective herbicide to kill weed seedlings

Mixing of chemicals i.e. thunder (pesticides), nativo Pesaro (fungicides) wuxal (foliar fertilizer)

It was being directed by my supervisor on how to mix chemicals to ensure that they cannot cause harm to the crops

The table showing the rate was using for each mix per six thousand liters of water

Chemical	Dosage	Amount Of Water
Thunder	9000ml	6000litres
Native	2500ml	6000litres
Presaro	750ml	6000litres

I was also briefed by my supervisors that don't mix more than three chemicals for one spray and do not mix two chemicals that can perform same purpose like thunder and bulldog in which both of them are pesticides

1.14 counting and calculating the heading and booting to estimate the percentage of barley yield on the demonstration plots.

03

My supervisor Mr. Ojara Geoffrey assigned me to find out the percentage of the variety that has headed and booted to compare the varieties and 1000seeds were planted in each bed/plot i.e. gave the guideline on how to calculate as follows

$$\text{Booting and heading} = \frac{\text{number of plants that has booted and headed}}{\text{Total number of seeds sawn}} \times 100$$

Out of the above I got the results as shown below

Variety	Total plants	Total number of plant booting and heading	Percentages
HESSEKWER	1000	563	56.3%
OVER FURE	1000	458	45.8%
T289	1000	541	54.1%
KSB(‖)	1000	889	88.9%

Table showing the map of the demonstration plots

T1	T5	T1	T5	T4
T2	T4	T2	T3	T1
T3	T3	T3	T4	T3
T4	T2	T4	T1	T2
T5	T1	T5	T2	T5

Table showing the number of tillers in each block

Block one with five treatments

T1	T2	T3	T4	T5
441	495	626	524	371

Block two

T1	T2	T3	T4	T5
422	554	555	1103	368

Block three

T1	T2	T3	T4	T5
498	515	418	340	486

Block four

T1	T2	T3	T4	T5
250	247	380	479	543

Block five

T1	T2	T3	T4	T5
345	539	513	334	401

Calculation of the yield projection at the demonstration plots

The samples are as follows

First, second, third, fourth, fifth throws

689, 622, 572, 549, 500 tillers per square metre

22, 24, 20, 18, 26 grains per head

$\frac{2922}{5}$ =584.4 average number of tiller per square metre

Average number of grains per plant =22

Number of grains per square metre 584 x 22 =12848

Weight of each grain when dry =0.04 grams

O.04 x 12848

=513.9 grains pre metre

For one acre

$\frac{513.9 \times 400}{1000,000}$ =2.05 tones per hectare

My supervisor also emphases to us that counting the plants carefully and divide over the number of plants that germinated

i. The PH of a specific area can be different from the other part the farm
ii. Soil fertility may also differ from one locality to another for this reason he said this will cause difference in growth and yielding of the crops this you differently in another plots compared to the other
iii. Laying out/field marking of demonstration plots on already established barley crops this was done to compose the performance of different chemicals in the control of weeds pests and diseases

They were used as follows

- Husiar and Bactril MC as weed control chemicals
- Plouran and native as a fungicide control chemical and disease like early blight, leave rust, stem rust and powdery mildew.

- ❖ Bulldog star and thunder for the control of all kinds of pests. However my supervisor added that the plots must be market clearly in a straight-line and point should be closed

1.16 Opening of guard rows in the demonstration plots. This was done to prevent the transmission of diseases and pests from one plot to another the guard rows were opened 50cm between each row

Explaining the signs and symptoms with control of powdery mildew and early blight which is major threat in the farm and disease can cause up to 90% lose if not controlled early I and my supervisor thought it wise to advice farmers about the early signs of powdery mildews and early blight so that they can do the explanation he told me were as

- ❖ Powdery mildew it is a fungal disease that develops as brown spores under the leaves Symptoms
- ➢ Brown/yellow powdery growth the leaves
- ➢ Attacked leaves turn whitish grew on the surface
- ➢ There is pre-mature ripening of effected leaves
- ❖ control
- ➢ Use of fungicides like native and nopuran close monitoring and supervision of the crops
- ❖ Early blight
- ➢ Symptoms
- ➢ Yellowing of the leaves
- ➢ Serious infestation of the disease cause drying of the leaves from the tip and causes rotting of the leaves sheath
- ❖ Control
- ➢ Use of the fungicides like native
- ➢ Closed monitoring and quick action in case of disease attack
- ❖ Varieties of barley

The common varieties include

- ➢ Ksb(||)
- ➢ Hesse kwer
- ➢ Overture
- ➢ Sse564

2.7 PLANTING MATERIAL

The crop is propagated by seed free from diseases and pests ,should be well dried and treated

with a fungicides before planting

Planting

They can either be planted by broadcasting or in arrow by planters at a spacing of 17-20cm by continues and about 1.2cm deep should be covered with fine moist soils for proper germination

Fertilizer Application

Fertilizers are mainly applied according to the soil fertility I.e. DAP can be applied at a time of planting at a rate of 50kg-60kg per acre. CAN can be applied at top dressing fertilizers at a height of about 10-15cm about the ground and same foliage fertilizers like wuxal, boaster can be also be applied.

Weed management

Weeds can be controlled whenever they appear in the farm by either hand pulling or chemical application like radon super EW75, selector OD375 and Bactril MC

Pests and diseases

Pests aphids these are green small insects that suck sap from the plants they mainly attack the stem parts and leaves of the barley.

Control

- Use of chemicals pesticides like thunder, ambush and rocket
- Yellow boll warm

It is a small yellow fleshy and pale yellow warm which enters the plant through tip and barrow s downwards causing a death heat it also, causes general yellowing of the plant

Control

- Spraying using systematic pesticides like thunder and bulldog star

Diseases

- Net blotch

It starts by yellowing at the tip of the leaves and later it electuaries and dries the whole leaf leaving the veins causing a net like structure

Control

- Proper spraying /use of correct seed rate
- Use of fungicides like native , Presaro and flonuran
- Leaf rust

It's a fungal disease

Symptoms

- Yellow powdery substances at the lower side of the leaves
- Doted yellow and black spots at the surface of the leaf

Control

- Grow resistant varieties like hesse kwer
- Spraying using fungicides like nativo and Presaro

2.8 USES OF THE FERTILIZERS

- Used for chlorophyll fomentation
- Increase the stems strength
- Increase resistance to diseases

Disadvantage of DAP.

- Increase the soil acidity
- May burn and cause seed dormancy

If used in large quantity and direct contact with the seed

Precaution and recommendations

- Apply the fertilizer when the soil are moist
- Use the fertilizers at the right and at the correct rate

Spraying of barley against weeds on the stores plot

This is a maintain operation done to increase the product. I was spraying using a knapsack on the demonstration plots the chemical I use was Bactril,

During my spraying my field supervisor Mr. OJARA GEOFREY explain to me that;

- Herbicides should be applied during mild conditions
- Use the correct pressure, height above the crop and at the constant speed
- Do not swing the nozzle right left when spraying to ensure uniformity of the spraying.
- Use the correct dosage of the chemical as direct on the label

2.9 CHECKING OF THE BARLEY IN NAIROBI PLOT

While I was in the field I and my field supervisor use to first do field check up i.e. checking of the grains tillers and leaves of each plant as a result we had to find the but the yield projection of each treatment

Yellowing

Yellowing of plant leaves may be as a result of

- Early blight;
- Yellow boll warm attack
- Stem rust diseases
- Nutrient deficiency

Stunted growth;

- Nutrient deficiency
- Presences of a hard band
- Increased acidity of the soil
- Water stress
- Water logging

Wilting;

- Western blight
- Cut warm infestation
- Water stress
- If it was then the chemicals were concentrated.

I was being shown the different chemicals in the stores and their uses .my supervisor was able to show me the different chemicals which include;

Pesticides

Native

This is a white suspension used for controlling fungal diseases in barley like stem rust, yellow rust

CHAPTER THREE

3.0 IMPACT OF THE ATTACHMENT

Skills gained from the attachment while I was in the field I carried out different activities that have boosted my knowledge of understanding as far as agriculture is concern

First and foremost I perfected on the growing of barley as the production adding to the knowledge and skills that I acquired during my class work theoretically was converted to practical action and am able to approach and advice farmers on different management practices of crop production

Am now able identify the different diseases that affect barley as a crop and possibly the control measures the internship also exposed me to the working environment of management and interacting with the farmers' works and the agricultural officials like the farm manager

3.1 CHALLENGES FACED IN THE ATTACHMENT

- The site is located far from the center/town so transport or access of the farm is difficult
- Facilities, tools, equipments, are very old end poorly serviced
- Access of water source is hard and far hence making irrigation and domestic purposes of water difficult
- Distances covered is large and operating management are few
- Over use of land in the same type of plants year after year
- Over use of fertilizers and mechanization courses soil erosion
- Low preservation methods like traditional ways of farming
- Covalent farming is locking skilled labor

CHAPTER FOUR

4.0 INTRODUCTION

4.1 CONCLUSION

I would like to summaries by thanking the administration of Kapyoyon Farm and Sebei Cooperative Union for put up building, mechanization and machinery.

4.2 RECOMMENDATION

I would like to recommend on the method of cultivation

Provide with transport facile and infrastructure

I recommend on the modernization.

APPENDIX I

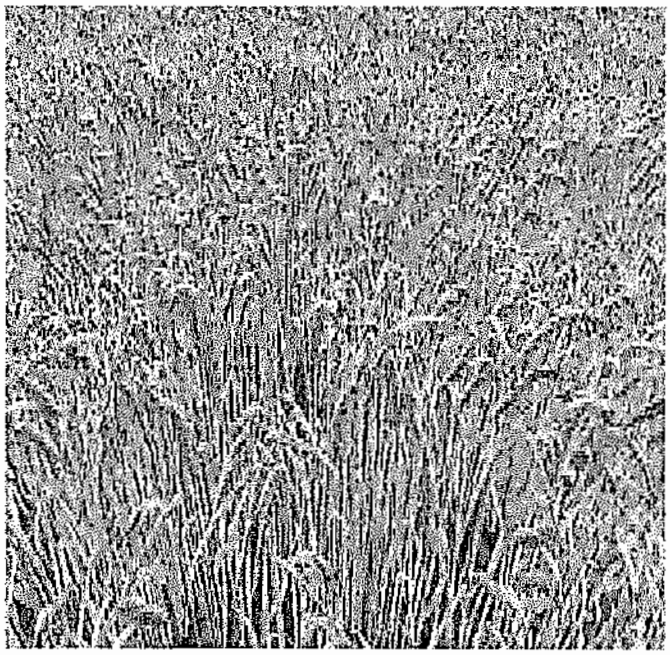
Planting of barley seeds

Top dressing

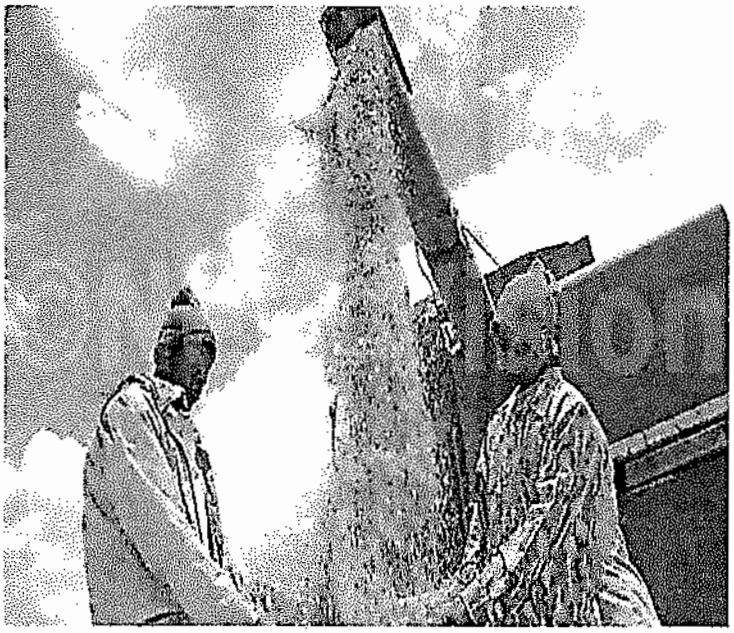
Barley at tillering

Barley at booting

APPENDIX II



Ready for harvesting



Barley on harvest