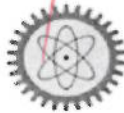


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P.O. Box 236, Tororo, Uganda
Gen. +256 - 45 444 8838
Fax +256 - 45 4430517
Email: info@busitema.ac.ug

www.busitema.ac.ug

**REPORT ON THE INDUSTRIAL TRAINING CARRIED OUT AT NATIONAL
SEMI-ARID RESOURCES RESEARCH INSTITUTE (NaSARRI) FROM 28THFEB,
2022 TO 16TH APRIL 2022**



COMPILED BY:

EGONU RAPHAEL

REG.NO: BU/UP/2019/1987

E-MAIL: egonuraphael@gmail.com

ACADEMIC SUPERVISOR:

MR.MAYANJA IBRAHIM

**TO BE SUBMITTED TO THE DEPARTMENT OF AGRIBUSSNESS AND
EXTENSION AS A PARTIAL FULFILLMENT FOR THE AWARD OF A
CERTIFICATE IN GENERAL AGRICULTURE OF BUSITEMA UNIVERSITY.**

DATE OF SUBMISSION:

20th 05/2022

0.5


DECLARATION

I EGONU RAPHAEL declare that the information in this report is exactly of my own hard work and has never been submitted to any institution of higher learning or any University for any award.

STUDENT

NAME: EGONU RAPHAEL

DATE 18TH/05/2022

SIGNATURE 

Name ; signature & date of supervisor (c)



APPROVAL

This is to confirm that the work presented here was done under our supervision and it is original piece from the student.

FIELD SUPERVISOR

Name... Emanio John

Sign... [Signature]

Date... 18th/5/2022

[Red Signature]

NaSARRI INTERNSHIP COORDINATOR

Name... [Signature]

Sign... [Signature]

Date.....



DIRECTOR NaSARRI.

Name... ORUA OSMAN EMIDIATIS

Sign... [Signature]

Date... 18/5/2022

ACADEMIC SUPERVISOR

Name... Emanio John

Sign... [Signature]

Date.....

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DEDICATION

I dedicate this report to the Almighty God for giving me the knowledge, strength, wisdom and encouragement.

I also dedicate the work and potential to my parents Mr. Etengu Martin, Ms. Asio Regine, Ms. Atim Susan. My aunty Ms. Ilado Susan and grandmother Ms. Apiny Anne for the love, prayers and financial support they offered to me.

Lastly, I dedicate this report to my field supervisors and supporters, siblings and friends for the support they provided to me during my internship and God may bless them abundantly.



ACKNOWLEDGEMENT

My great appreciation goes to the staff of NaSARRI for the hospitality, guidance and allowing me to undertake internship at the institute.

I would like to thank my supervisors, the staff of NaSARRI and field assistant for the skills and knowledge they shared with me while undertaking internship. My friends for great co-operation together during training.

Most of all I thank God for granting me good health and protection during my training.

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LIST OF ABBREVIATIONS

NaSARRI	National Semi-Arid Resources Research Institute
SARRI	Serere Agricultural and Animal Resources Research Institute
IT	Industrial Training
OPV	Open Pollinated Varieties
NARO	National Agriculture Research Organisation
NAROSORG	Naro sorghum ✓
SESO	Serere srghum
SERENUT	Serere groundnut
SEPI	Serere pigeon pea
SESUN	Serere sunflower

06/18

ABSTRACT

The industrial training was conducted at NaSARRI in Olio Sub County, Serere district, there are five programs conducted namely cotton, oil crops, dry land legumes, dry land cereals, farm management. The main objective of training was to produce practically hands on orientated field experience.

During the training at NaSARRI, different activities were carried out that included; disease identification in most programmes, thinning in green gram, seed sorting in cotton, data collection across all programs, scouting of flowers, emasculation in ground nut and cotton, selfing and crossing in ground nut and cotton,

However, some challenges were encountered during the IT such as inadequate equipment for laboratory and data collection work, drought that adversely affects the experiments.

In conclusion, I gained a wealth of experience with regards to work and I am very optimistic that this industrial training will contribute significantly to my carrier development as an agricultural professional.

CHAPTER ONE

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1.0 INTRODUCTION.

NaSARRI. Is a short form for National Semi - Arid Resources Research Institute.

Internship training is mandatory for students at all levels of higher education to increase the level of skills and knowledge to be used at the field. This program was introduced to empower students to receive practical experience in effective communication, technology, team work, practices.

1.1 Background of NaSARRI.

NaSARRI is one of the sixteen agricultural research organizations under National Agricultural Research organization (NARO).

NaSARRI was started in 1920. It was changed to Serere Agricultural and Animal Research Organization (SAARI) that was to carry out Research for Semi-arid tropics deriving NaSARRI with support from the government of Uganda and several donors.

1.2 LOCATION OF NASARRI

NaSARRI is one of the research institutes of National Agricultural Research Organization (NARO). It is located in the eastern agro-ecological zone in Serere district that was previously under Soroti district.

1.3. Vision of NaSARRI.

To be a market leader in generation and dissemination of appropriate technologies for sustainable development in semi-arid areas,

1.4. NaSARRI's MISSION.

To generate, package and disseminate appropriate agricultural production technologies and information for improved and sustained integrated crop and natural resource management in the semi-arid areas in partnership with other stake holders.

1.5. NaSARRI's MANDATE.

To undertake research in crop production technologies for semi-arid production systems so as to get high yields, disease resistant varieties.

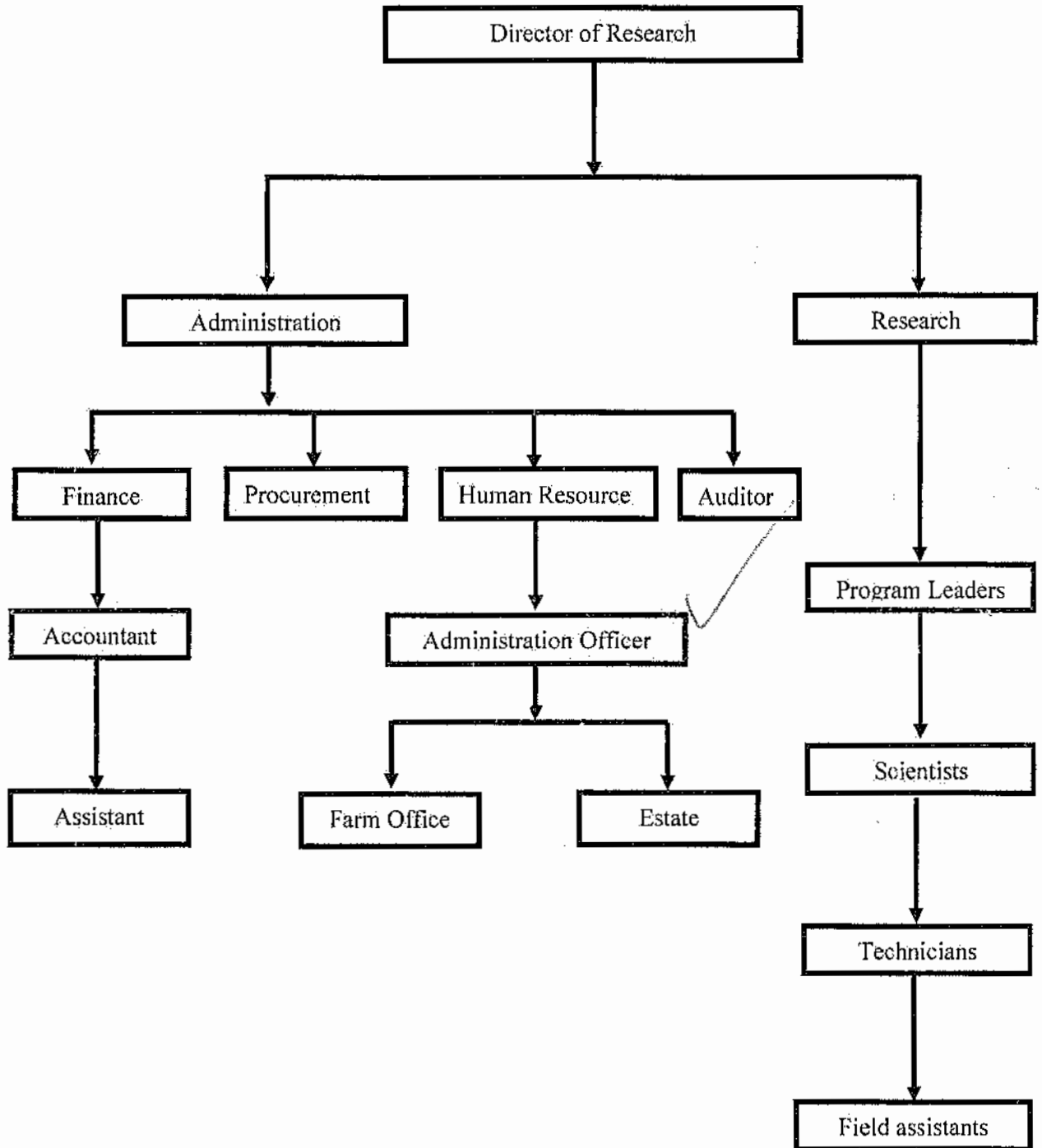
1.6. NaSARRI's RESEARCH PROGRAMMES.

To ensure efficiency and quality research outputs, NaSARRI is organized into five research programs; these include; Dry land legumes program, Oil crops program, Dry land cereals program, Fiber (Cotton) Program and Farm Management.

1.7 OBJECTIVES OF THE INTERNSHIP:

1. To get technical and practical skills to broaden the learners to understand and be able to relate classroom knowledge to the actual on hand oriented.
2. To be able to identify various problems faced by farmers and the community as a whole as and able to come up with solutions addressing these problems

1.8 ORGANISATIONAL CHART OF NARO SECRETARIATE ORGANISATION



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CHAPTER TWO

No description
of specific department
of attachment &
a typical
working day

2.1 INTRODUCTION TO COTTON (*Gossypium spp*)

Cotton is the third largest perennial cash crop export in Uganda followed by coffee and earns 30% of foreign exchange and its source of income over 2500 households in Ugandans

It is produced by rainfall conditions less on irrigation system and hectare size is 0.5 with average yield of seed cotton ranging from 625kg/ha to 1250kg/ha but under rich soil is 3750kg/ha.

The maturity period of cotton differs like MS 120-150 days and Ezam 100-135 days.

2.1.1 IMPORTANCE OF COTTON

- For income generation
- Lint used in textile in production of garments
- Used for oil extraction
- Used for making soap
- Cotton seed cake is used for making animal feeds
- Cotton stem are used for fuel

2.1.2 RESEARCH OBJECTIVES UNDER COTTON PRODUCTION

(a) Cotton breeding on varieties improvement selection

- The main aim of breeding is as follows;
- Early maturity, production of high lint fiber
- Production of varieties resistant to pest and diseases
- Produce cotton seeds with high cotton oil content
- Produce cotton that adapted to the environment
- Produce cotton with high cotton seed quality along with value chain

2.1.3 SELFING OF COTTON IN THE DEMONSTRATION GARDEN.

This is the art and science of transferring pollen grains from the anther head to the stigma of same flower of same species

Procedures of selfing cotton

- Identify the high yielding crop and low yielding crop and compare their growth habits
- Mark the identified flower using a string at the base of the fruit

- Tie the petal of the flower to avoid pollutants from transferring the pollen grains
- Leave the experiment for about 3-4 day for pollination to take place
- Watch and observe the color of the petal until it changes to brown to pinkish and later falls

Conclusion

When petals have not changed the color, the experiment was not successfully done.

2.1.5 CROSS BREEDING COTTON IN THE DEMONSTRATION GARDEN.

This is the transfer of pollen grains from the anther head of the flower of a plant bearing the desirable trait characters to stigma of another flower of a plant having undesirable characters in order to attain desirable plant characteristics for the better performance.

Procedures of cross breeding.

- Introduce germ plasma to the field
- Identify the superior plant with desirable characteristics for crossing
- Plant the germ plasma closer but at the spacing that cannot cross each other
- Study the two plants with desired characters which is the best for cultivation
- Obtain the flowers during flowering from the two plants of different varieties
- Make sure that plant with desirable characteristics is taken as a male and of poor characteristics as a female
- On the female flower tie a tip of an open petal using a string
- On a male plant flower detach the male part of plant
- By using inoculants cover the stigma of flower (female)
- Leave the experiment to stand to a degree of heating by sun shine for two to three days
- Report back to the field of experiment and transfer pollen of the male plant by detaching the flower and introduce it to the stigma of the female which has been inoculated

Note: during the transfer of the pollen grains the anther head of the male flower is exposed, detached and the petals are removed and then dusted in to stigma of an inoculated female plant flower

Conclusion

If the inoculants drop off without the boll forming the crossing was not successful

If the inoculants drops off realizing that the bolls are formed that means crossing was successful

DATA COLLECTION

Data collection was based on the following:

The height of the plant, number of squares, leaves, branches, flower, bolls and chlorophyll concentration

2.1.4(B) AGRONOMY ON COTTON PRODUCTION.

This is the art and science which deals with planning e.g. land marking and manage mental practices carried out on the field to ensure better production of cotton.

The following are the practices carried out on agronomy.

Land preparation;

Land preparation is done using garden tools such hoes pangs, the land should be cleared before the rains start especially on the month of February and the ploughing on the march and by May –June planting is done.

Getting of cotton seeds

Obtain seeds that have been seed dressed, avoid planting old and from unknown source

Soil sampling

A farmer should test for the PH of the soil and requirements in the soil such as fertilizers and not present apply SSP, DAP, NPK and more so organic fertilizers from dung, chicken droppings.

Timely planting

Planting time depends on the area and the region, May-June Eastern, July-August Northern and Western Uganda.

Planting of cotton seeds

If the farmer is not sure of his seeds plant 3-4 seeds per hole but if you are sure plant 2-3 seeds per hole and then cover with light soils do not compact the soil and the depth of the hole should be 4cm.

Spacing

The recommended spacing of cotton is (75x30) cm for earthen and (90x30) for the northern

Fertilizer application

Fertilizers should be applied such as Bio potash and Bio phosphate at planting rate of 25kg/kg and top dressing with urea

Seed rate

A farmer should get 25kg/ha if he wants to achieve maximum yield on cotton production

Weeding

Weeding should be done 2-3 weeks after germination and should be 3-4 times

Harvesting of cotton as one of the Agronomic practices

Cotton is harvested using hands through picking using picking Bags, it's majorly advised to pick cotton the open and die immediately to quality cottonseed and seed cotton.

Pest and disease management on cotton production as one of the agronomic practices

2.1.8 PATHOLOGY

A pest is an organism that destroys the plants and lowering its productivity.

Some of the pests are;

Aphids, mites, cutworms, bugs, spider mites, fall army worm and white flies

Damages caused by pests unto cotton

- They damage cotton seeds.
- They damage seed cotton.
- They cause tunnels on the leaves.
- They suck sap from the plant.

- They destroy the plant tips.
- They eat and destroy the plants' buds, flowers and bolls.

2.1.5 DISEASES OF COTTON

Cotton diseases are classified as follows.

Cotton seedling diseases; these are diseases which mainly attack cotton seedlings and affected seedlings die and collapse.

These diseases are caused by the pathogens these are; Rhizotonia, pythium and Fusarium

The affected plants residues are the source of diseases and they are caused by Fusarium species.

SIGNS AND SYMPTOMS OF COTTON SEEDLING DISEASES;

- The affected cotyledons die and coarise and kill the leaves of the seedlings and its common in irrigated areas
- The affected seedlings are easily uprooted
- The root tips are moist and sticky

(a) Cotton folia diseases

These are diseases which are caused by bacteria

The disease is caused by the bacteria called *Xanthomonas malvacearum*

(b)(1) Angular leaf spot

The diseases is common where cotton is grown and serious during rainy season

EFFECTS OF ANGULAR LEAF SPOT ON COTTON;

- The affected seedling loose shape and die
- Reduces photosynthesis in the seedling
- The stem and the branches brake

SIGNS AND SYMPTOMS OF THE ANGULLER DISEASE:

- Seedling blight, black arm, angular leaf spot and boll lesions
- Leaves appear brown to black lesion
- Small angular water soft spot appear on under side of the young leaves of seedlings after emergency

(c) Root disease; Root disease are caused by fusarium wilt

SIGNS AND SYMPTOMS

- The cotyledons and leaves loose turgidity
- Cotyledons turn yellowish and brownish
- Browning of vascular system
- The disease blocks the plants water conducting tissues.

(d) Soil nematodes diseases

These are diseases found in the soil and they are caused by bacteria

Bacterial blight complex

SIGNS AND SYMPTOMS

- Boll rot
- Black arms when it attacks the stems
- Leave spot when attacks the leave

(e) Vastilium disease

It's caused by vastilium spices

Signs of Vasculium wilt

- It's majorly found in irrigated areas
- It's serious below the temperatures of 30 degree Celsius
- It appears during squaring and boll formation
- It has a wide host range

(f) Altanaria disease

- It's caused by Altanaria spices and the signs are;

- It has small pale brown round irregular spots on the leaves
- The affected leaves become dry and fall off
- Cracks appear on the affected leaves
- Causes the fall off bolls
- Affected boll grow on exposed lint if bolls open during wet weather
- Primary source of inoculums is un decomposed crop residues

(g) Cotton leaf curl virus

Signs of the disease

- The leave appear darker with upward curling in shape of the plant.
- Affected leaves remain stunted
- Affected crops do not form bolls
- Draftic reduced production
- It's transmitted by the white flies

CONTROL OF COTTON DISEASES

Breeding for resistance, practice of crop rotation, avoid mechanical damages, control weeds, control thrips which transmit mosaic, use chemicaais like cruza, seed plus Bronopol

Practice crop rotation, macil fungicides and use copper oxide

PREVENTION OF COTTON DISEASE

- Plant satisfied seeds free from diseases
- Monitoring aimed at detecting the presence assessing the progress of the diseases
- Regularly inspect cotton field
- Dress your cotton seeds
- Treat your seeds before planting
- Enforce direct control measures such as uprooting, burn before the attack

COTTON SEED PROCESSING

The following are the step take when processing seed cotton;

Obtain raw cotton seeds by picking, sorting, ginning of seed cotton, take weight of seed cotton and cotton seeds, the lint, and treat with craze, and Bronopol, seed selection and seed labeling

RESEASONS FOR SEED DRESSING

- To kill disease organism found in the seed before planting
- To protect the seeds from seed born disease organisms that would affect germination
- Seed dressing chemical supports the seed germination process and protect the seed to the 3rd week of germination against primary pest cotton which include aphids, Lygus before onset of insecticide application
- It improves on the plant health and vigor for health yield attributes.

CAUSES OF POOR PERFORMANCE OF COTTON

- Pest and disease attack
- Poor hygiene during ginning of cotton
- Institutional challenges in coordinating cotton production activities.
- Importation of second hand clothes into Uganda causes low production of cotton.
- Local cotton textiles are not encouraged but owned by foreigners who make high profits

COTTON PRODUCTION RECOMMENDATIONS

- Plant cotton from May-August for best yields in view in changing weather partners across the whole country
- Plant satisfied seeds, dressed and supplied by cotton development organization
- Avoid seeds that remain in your store
- Plant as recommended on the seed bag 3-4 seeds per hole.
- Plant 3kg/ha at 75cmx30cm leaving 2 plants per hole which gives 8900 plant per hectare.

2.2 INTRODUCTION TO DRY LAND LEGUMES RESEARCH PROGRAMME:

This program conducts research in cowpea, pigeon pea and mung bean (green gram)

2.2.1 INTRODUCTION TO PIGEON PEA

Pigeon pea is one of shrub like legumes which is commonly grown in semi-arid desert areas which include eastern, northern, west Nile and central Uganda. It contains more nutrients such as vitamin A, C and proteins up to 28% making it ideal supplement to traditional serials such as bananas and tuber crops.

IMPORTANCE OF PIGEON PEA

- Source of food
- Source of income
- Improves soil fertility through nitrogen fixation
- Increases the infiltration of water to the soil
- Improves the soil structure
- Contains iron and phosphorus into the soil

2.2.2 AGRONOMIC PRACTICES

Requirements and seed bed preparation; Timely field preparation with application of DAP to improve on rooting and vegetative growth, the seed bed should be fine to ensure proper germination. Pigeon pea requires good soil fertility with proper drainage.

Planting and spacing; Planting should be done on the onset of rains to ensure good plant growth and canopy development. Spacing should be 75cm x 25cm is recommended, this spacing need a seed rate of 18-20kg/ha

Thinning; after germination which takes a period of 2-3 weeks, thin the crop leaving only two plants per hill

Weed control; generally three weeding intervals should be done first at 25-30days, second 50-60days and third 80-90days

Harvesting; Seeds should be harvested when ready, dried at a moisture content of 12% and properly cleaned through threshing and winnowing

2.2.3 PATHOLOGY

Disease management

Diseases of pigeon pea include;

These diseases are caused by fungi

Fusarium wilt, Cercospora leaf spot, powdery mildew.

Control of diseases

- Planting of resistance varieties
- Crop rotation
- Spray with fungicides such as mancozeb 80WP and cabendazims 50WP
- Field pest managements
- The pest cause severe yield reduction and grain quality and total crop loss.
- The following are some of the pests;
- Pod borer, pod suckers, blister beetles

Storage pest control

Pigeon pea is mainly attacked by the Bruchids;

The following are the control methods

- Store seeds in a clean dry place
- If gunny bags are to be re-used soak in boiling water and dry to kill any remaining Bruchids.
- Regularly place the seeds in the hot sand in about 3-4 days per month.
- Store seeds in air tight containers
- Grains can be protected from Bruchids by mixing grains with equal quantities of sieved sand
- Mix seeds with insecticides and fungicide

2.3 OIL CROPS: (groundnuts, sunflower, and Sim-sim)

2.3.1 GROUNDNUT SECTION

ACTIVITIES CARRIED OUT IN THE SCREEN HOUSE

- Emasculation of flowers
- Identification of germplasm or parental lines for c
- Scouting flowers which have blossomed

Groundnut plant description:

Cultivated groundnuts (*Arachis hypogea*) belong to genus *Arachis* and family leguminaceae. Groundnuts are self-pollinating indeterminate herbaceous legumes that grow to a maximum height of 60m.its fruit is a peg with one to five seeds that develops underground within a needle like structure called a peg (an elongated ovarian structure).

Reasons for breeding groundnuts.

- To get leaf miner and rosette resistant varieties.
- To generate Aflatoxins resistant varieties.
- To develop early maturing varieties.
- To develop high yielding groundnut varieties.
- To get groundnut varieties with a high oleic content and good confectionery quality.

Importance of groundnuts in Uganda

- Source of edible cooking oil
- Groundnut seed cake can be fed to animals.
- It can be consumed as convectional product.
- It's an important protein supplement in cattle and poultry rations.

Activities carried out at the groundnut section.

Identification of groundnut diseases, their damages on groundnuts and control measure

Table 5 showing groundnut diseases, symptoms and control measures.

DISEASE	DAMAGE	CONTROL
Groundnut rosette	Stunted growth Reduced size of leaflets	Timely planting Recommended spacing for the variety Grow resistant cultivars
Early leaf spot	Chlorosis at early stages	Plant resistant varieties Crop rotation
Late leaf spot	Drying and premature falling of leaves	Crop rotation

2.3.2 INTRODUCTION TO SUN FLOWER (*Helianthus annuus*)

In sun flower, the agronomist introduced to me this crop and its importance of growing, agronomic practices like; seed selection, land preparation, planting, pests and disease control which lead to the production for better yields of the crop and to conserve soils and water in the soil for maximum utilization by plants in order to complete their growth stages successfully. This is as disused below;

Sun flower is the greater feeder crop. It is tolerant to drought conditions because of the deep tap root which enables it to suck nutrients and water from deep layers of the soil.

Sunflower is of three types i.e. Hybrids, open pollinated varieties (OPVS) and records

The hybrids varieties respond well to fertilizers than any other types. The examples of the Hybrids are SESUN 1H, SESUN2H.

2.3.3 Agronomy of sunflower.

- 1) **Seed selection:** Good quality seeds are selected for planting
- 2) **Land preparation:** prepare land 1-2 times to obtain a fairly smooth seed bed
- 3) **Planting:** plant at the onset of the rains at the spacing of 75cm X 30cm and must be planted in rows.
- 4) **Weeding:** weed as soon as weeds appear to reduce on the competition for nutrients.
- 5) **Fertilizer application:** Apply SSP at planting time at 50kg/ha to 125kg/ha and CAN at flowering at 50-125kg/ha to boost seed setting.
- 6) **Intercropping:** Sunflower can be intercropped with other crops like beans and ground nut at ratio of 1:1 at one day or one week

Pests and Diseases of Sunflower

Pests

1. **Birds:** Are the serious pests that eat on sunflower seeds. The birds like the doves, weaver birds, chickens and others. These can cause total loss 100% if the control measures are not taken place.

Control measure is by scaring the birds by human beings, use of scare—crows.

2. **Nematodes:** The nematodes are small microscopic living organisms in the soil. Nematodes attacks the roots of the sunflower hence causes wilting and make the plant prone to bacterial and fungal infections.

Control measure: Can be controlled by use of **nematocides** like **nemagon** and knowing the history of the field, in that if the field is infested with nematodes can be avoided

3. **African boll worm:**

This feeds half way inside and half way out side.

The control measure is by crop rotation and sprayings using insecticides like Cypermethrin.

Diseases of sun flower.

1. **Alternaria leaf blight (fungal):** The **symptoms** of the attack includes; Dark brown lesions under neath the leaf surface and defoliation of leaves. It can be **controlled by;** removing the plant debris after harvesting since they act as alternative host for the disease, crop rotation and use of fungicides.

2. **Downy mildew (fungal):** Affects mostly the seedling and causes death. If the plant survives they become **Chlorotic with thickened leaves; whitish cotton growth** is present underneath the leaf surface. The control is application of fungicides, crop rotation, and use of resistant varieties.

3. **Verticillium wilt (fungal):** The symptoms of the disease include, the lower surface of the leaf develops mottled appearance (irregular).

2.3.5 THE ACTIVITIES CARRIED OUT IN SUNFLOWER.

In sun flower, the field assistant introduced to me various methods of data collection and I fully participated in collecting data digitally, seed counting, seed weighing

2.4 INTRODUCTION TO CEREALS BREEDING PROGRAM:

2.4.2 SORGHUM (*Sorghum bicolor*)

In sorghum, the technician introduced me to sorghum as a crop grown in Uganda stating its origin, breeding activities, the agronomic practices in sorghum for better yield and quality produce. They are as discussed below;

2.4.2.0 INTRODUCTION TO SORGHUM

Sorghum is an important cereal and one of the major drought tolerant crops in the arid and semi-arid regions. This explains why it's more intensified in the northern eastern and

southern parts of the country; Teso sub region in particular, the production of sorghum is largely for home consumption and commercial purpose. In Uganda it's the third widely grown crop. Sorghum is believed to have originated from South Africa in the region bordering Ethiopia

Sorghum occupies 286 acres annually

Research work of sorghum in Uganda has concentrated mainly in Germplasm for genetic improvement.

Research has released many varieties; Seredo, Sekedo, Epuripur, Narosorg 1-4, Seso 1-3, those are the late

Table 2.1: Sorghum Entomology

Sorghum pest	Damage	Control
Stem borer	Borers into the main stem and interferes with the sap uptake to the damaged parts (phloem and xylem)	Spray using recommended pesticides/insecticides like striker, rocket, Dimethoate and chlorobenzo 100%
Weaver birds	They eat up the grains	Use scare crows, trap crops and early harvesting as soon as the grains matures
Grain weevils	Affect the sorghum grains both in the field and store	Good hygiene both in the field and store to reduce the rate of attack.

Table 2.2: Sorghum pathology

Disease	Symptoms	Control.
Ergot.	Causes poor formation of seeds due to honey milky secretions	Proper spacing, seed dressing using fungicides. Use resistant varieties Uproot affected plants.
Sorghum smuts.	Causes formation of empty grains (it's a seed borne disease)	Seed dressing using fungicides Avoid shaking the attacked panicles. Uproot and burn infected plants.
Downy mildew	Causes drying and splitting of leaves as if they have been damaged by hailstorms	Dress the seeds Use/plant resistant crop varieties

CHAPTER THREE:

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IMPACT OF THE ATTACHMENT.

3.1 SKILLS LEARNT AND QUALIFICATIONS DURING INDUSTRIAL TRAINING.

- I learnt to carry out emasculation, selfing and crossing in ground nut and cotton
- I was able to identify the various plant pests and diseases, the damages
- I learnt to do bulking of seeds according to entry numbers
- I got to know the different spacing of different crops in the various sections we v

3.2 CHALLENGES FACED DURING THE INDUSTRIAL TRAINING.

- Lack of computer to help in report typing and literature research
- The one weeks' time allocated to each department was not enough for the interns' students to learn everything within the institute.

3.5 CORRELATION OF THE ATTACHMENT ACTIVITIES

- I got to participate and see the different required spacing of different crops as taught in class.
- I got to know the difference between an acre and hectare
- I was able to learn the different pests and diseases, causal agents and their control measures as taught in class.

CHAPTER FOUR

02/5

4.1 CONCLUSIONS:

I appreciate God who has enabled me to complete my industrial training well .

I also want to thank all the staff of NaSARRI for their cooperation during my training, not forgetting all my fellow trainees for their support during the time of report writing.

4.2 RECOMMENDATIONS

- NaSARRI should introduce a health facility at the station so as to cater for the treatment of the students and staff that could act as the aid to the patients.
- The training institute should install enough Irrigation structures in order to overcome water shortage to crops especially during dry season.
- The management of Busitema should allocate enough time to students during the industrial training as it exposes students to all the programs.

07

APPENDICES

APPENDIX A.

WORKPLAN

Table 3.1 Industrial training work plan

WEEK /DATE	SECTION	ACTIVITY CARRIED OUT	RELEVAN CE OF THE ACTIVITY	PERSONEL
Week 1 28 th march to 04 th march 2022	Conference hall	-Orientation and allocation of students: -Showing students to different departments at NaSARRI (Dry land cereals, cotton, Dry land legumes, Oil crops, Offices and places of convenience) -The objectives of NaSARRI(To improve crop varrieties with high yielding potential) -Allocation of students to different programs in group.	-Ability to know different department at NaSARRI -Ability to know the objective of NaSARRI.	Students Mr. Okwang Dodah and Mr. Obuo Peter
Week 2 07 th march to 11 th marc h 2022	Dry land cereals	-Orientation to dry land cereals (sorghum, palm millet) -Plot weighing of sorghum -Data collection an recording using a record book. -Grain weighing of sorghum -Data collection and recording -100 seed counting -100 seed weighing -Data collection and recording	-I was able to know the breeding goals and outcome -I was able to determine the difference in weight of different plots of a	Students (Egonu Raphael) Mr. Okiasi Francis

			<p>particular yield</p> <p>-Ability to determine the yield potential of a particular line</p> <p>-I was able to differentiate 100 seed weight from grain weight.</p>	
<p>Week 3 14th- march to 18th march 2022</p>	<p>Oil crops</p>	<p>-Introduction to oil crops</p> <p>-Ground nut breeding</p> <p>-Scouting of flowers</p> <p>-Tagging of flowers</p> <p>-Crossing of ground nut</p> <p>-Identification of plots, Rep No, location</p> <p>-Weighing of 100 seed weight</p> <p>-Weighing of the plot seed weight</p> <p>-Taking data digitally</p> <p>-50 pod dry weight</p> <p>-Plot pod dry weight</p> <p>-Packaging of seed according to plot numbers, replication numbers</p> <p>-Pest Identification in sunflower</p> <p>-Disease Identification in sunflower</p>	<p>-I learnt the importance of ground nuts</p> <p>-Ability to carry out scouting of flowers</p> <p>-I also learnt crossing</p> <p>-I was able to identify different plot replications</p> <p>-Ability to take seed weights</p> <p>-Ability to record data digitally</p>	<p>Students (Egonu Raphael) Mr. Egosu John Kokas Mr. Omara Brian</p>

			<ul style="list-style-type: none"> -I was able to package the seeds according to plot numbers -Ability to know different pests and diseases 	
<p>Week 4 21st march to 25th march 2022</p>	<p>Dry land legumes</p>	<ul style="list-style-type: none"> -Introduction to legume crops (green gram, pigeon pea, cow pea) -Bulking of seeds according to entry numbers -Packaging of seeds -100 seed counting -100 seed weighing, data collection -Seed dressing using hactelic powder -Pest identification -Disease identification -Thinning of pigeon peas in the screen house 	<ul style="list-style-type: none"> -Ability to group seeds according to entry numbers -Ability to package seeds according to plot numbers and replication numbers -Ability to know the chemical for seed dressing 	<p>Students (Egonu Raphael) Mr. Ariko John Bosco Mr. Wangolo Kenneth Ms. Akao Charity</p>



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

P.O. Box 236, Tororo, Uganda
Gen: +256 - 45 444 81138
Fax: +256 - 45 4436517
Email: info@adm.busitema.ac.ug
www.busitema.ac.ug

8/12

INDUSTRIAL TRAINING WEEKLY LOGBOOK

NAME:

EGONU RAPHAEL

REG. NO.

BULUP/2019/1987

1st Week


ORIENTATION AND ALLOCATION

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
28 th 02-2022 To 07 th 03-2022	Orientation and allocation of students. This involved: Showing students to different departments at KASAREI like Dry land cereals, Cotton, dry land legumes, All crops, Offices and places of convenience. - The objectives of KASAREI (To improve crop varieties with high yielding potentials) - Allocation of students to different programmes in groups.	Ability to know different departments at KASAREI Ability to know the objective of KASAREI	Students Mr. Okung'udu and Mr. Obuo Peter	

Name: EGGON PAPHAKEL

Reg. No. BULUPEL20191987

CGA11

Signature: 

2nd Week: DRY LAND CEREALS

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
7th-03-2022	1. Orientation to dry land cereals (Sorghum, Palm millet)	I was able to know the breeding goals and outcome.	Egonu Raphael (Student) Mr. Okiasi Francis	Attended <i>[Signature]</i>
8th-03-2022	Plot weighing	I was able to determine the difference in weight of different plots of a particular yield.	Egonu Raphael (Student) Mr. Okiasi Francis	Participated <i>[Signature]</i>
10th-03-2022	1. Grain weighing 2. Data collection and Recording	Ability to determine the yield potential of a particular line	Egonu Raphael (Student) Mr. Okiasi Francis	Participated and involved <i>[Signature]</i>
11th-03-2022	1. 100 Seed counting 2. 100 Seed weighing 3. Data collection and Recording.	I was able to determine the difference in weight of different plots of a particular yield.	Egonu Raphael (Student) Mr. Okiasi Francis	Good Participation and involvement <i>[Signature]</i>

Name: EGONU RAPHAEL Reg. No. BULUP12019/1987

Class: C.GA.11 Signature: *[Signature]*

3rd Week: OIL CROPS

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Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
14 th 03-2022	Introduction to Oil Crops General overview. The following are activities - Scouting of flowers - Tagging of flowers - crossing	I learnt the importance of ground nuts - Ability to carry out Scouting of flowers that are not open for emasculation - I also learnt crossing	Egonu Raphael (Student) Mr. Egonu John Kokas (Field Technician)	Very good Egonu John Kokas Field Technician Kokas
15 th 03-2022	- Identification of plots, Repro, location - Weighing of 100 Seed weight - Weighing of the plot seed weight - Taking data using the digital data recording (taking data digitally)	- I was able to identify different plot replications - Ability to take seed weights - Ability to record data digitally	Egonu Raphael (Student) Mr. Egonu John Kokas	Excellent work Egonu John Kokas Field Technician Kokas
16 th 03-2022	- 100 Seed weight - Plot seed weight - 50 pod dry weight - Plot pod dry weight - Packaging of seed according to location - Plot numbers, replication numbers	- I was able to take weight of seeds of different plots - I was able to package the seeds according to their plot numbers	Egonu Raphael (Student) Mr. Egonu John Kokas	Excellent work Egonu John Kokas Field Technician Kokas
17 th 03-2022	- 1000 Seed weighing - 1000 Seed counting using a seed counter - Data collection and recording	- Capability to take seed weights - Ability to take data according to plot numbers and Rep.	Mr. Omara Brian	Actively participated Batis
18 th 03-2022	- Pest identification - Disease identification	Ability to know different pests and diseases in Sunflower	Egonu Raphael (Student) Mr. Omara Brian	Actively participated Batis

Name: EGONU RAPHAEL Reg. No. BULUP1201911927

Class: CA 11 Signature: [Signature]

4th Week: SEX LAMB REAUMES

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
21 ST /03/2022	Introduction to legume crops (Caneon grain, Pigeon pea, cowpea) Bulking	Ability to group seeds according to entry in a bag	Mr. Ariko John Bosco Egonu Raphael (Student)	Participant and I went on this trip. All things went on this trip were active. <u>Egonu Raphael</u> <u>21/03/2022</u>
22 ND -03-2022	Bulking Packaging 100 Seed counting 100 Seed weighing, data collection	Ability to group seeds according to entry in a bag Ability to pack seeds according to their plot numbers and repetitions	Mr. Okiria Emmanuel Egonu Raphael (Student)	Involved, used the machine to count <u>Egonu Raphael</u> <u>22/03/2022</u>
23 RD -03-2022	Seed dressing using heretic powder Packing	Ability to know the chemical for seed dressing and its importance.	Mr. Klugble Kenneth Egonu Raphael (Student)	Participated and the conduct was good. <u>Egonu Raphael</u> <u>23/03/2022</u>
24 TH -03-2022	Pest identification Disease identification	I was able to identify pests like aphids Ability to identify diseases in cowpea	Mr. Wangdo Kenneth Egonu Raphael (Student)	Being off season the small trail did not have all the pest but identified the few. <u>Egonu Raphael</u>
25 TH -03-2022	Thinning of pigeon peas in the screen house	Ability to know the importance of thinning	Mrs. Alao Charity Egonu Raphael (Student)	Involved and did no work. <u>Egonu Raphael</u> <u>25th/03/2022</u>

Name: Egonu Raphael Reg. No. BU/AGR/2019/1987

Class: CGA II Signature: [Signature]

5th Week: ... COTTON

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
29 th 03-2022	Breeding introduction crossing Selfing Emasculation	Ability to know the importance of crossing and selfing in cotton.	Esom Raphael (Student) Mr. Egedu Simon Peter Mr. Olupet John	
31 st 03-2022	Pest identification Disease identification	Ability to identify different pests and diseases in cotton	Esom Raphael (Student) Mr. Egedu Simon Peter Mr. Olupet John	
31 st 03-2022	Cotton Sorting Lint Sorting	I was able to sort lint.	Esom Raphael (Student) Mr. Egedu Simon Peter	
01 st 04-2022	Seed counting using a seed counting index	Ability to count seeds using a seed index of different plots	Esom Raphael (Student) Mr. Egedu Simon Peter	

Name: .. ESOM RAPHAEL

Reg. No. .. BULUP2019/1987

Class: .. CGA II

Signature: .. [Signature]


6th Week: **FARM MANAGEMENT**

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
4 th 04-2022	Meteorology identification of weather instruments (Rain gauge, Sunshine recorder)	Ability to know how different instruments work	Egonu Raphael (Student) Mr. Stephen Lian	7
5 th 04-2022	Horticulture introduction to horticultural crops (Sukuma wiki (collards))	Ability to identify various horticultural crops	Egonu Raphael (Student) Mr. Fius Okudi	
6 th 04-2022	Horticulture Site selection for nursery bed - Pest identification - Disease identification - Nursery bed management (weeding)	Ability to identify different pest and disease	Egonu Raphael (Student) Mr. Fius Okudi	
7 th 04-2022	Agri-forestry - grafting - Budding	Ability to know the relevance of grafting and budding	Egonu Raphael (Student) Mr. BETJ. M Odaka	✓
8 th 04-2022	Pastures - Pasture management - Weeding.	Ability to know management practices	Egonu Raphael (Student) Ms. Beth Arieng	

Name: **EGONU RAPHAEL** Reg. No. **BULUP12019/1987**

Class: **CGA 11** Signature: 

7th Week: FARM MANAGEMENT

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
11 th Oct 2022	Pastures - Slage making - Hay making	Learn procedures of making hay and Slage and their importance	Egno Raphael (Student) Ms. Betty Arieng	
12 th Oct 2022	Farm machinery identification of different farm machines (tractors, disc plough) - maintenance of farm machines	- Ability to know different maintenance practices	Egno Raphael (Student) Mr. J. D. Egan	
13 th Oct 2022	Animal traction - Yoke making - Identifying various farm machines (tractors, disc plough,) equipment - Maintenance of farm machines	- Ability to gain the knowledge of making a yoke.	Egno Raphael (Student) Mr. Nelson Kwaku	
14 th Oct 2022	Mushrooms - Identifying different equipment (bins) substrate for production of mushrooms - making mushroom gardens	Learn procedure of making mushrooms	Egno Raphael (Student) Ms. Malise Aning	
15 th Oct 2022	Farm records			

Name: EGNO RAPHAE

Reg. No. BU/19/1919/1927

Class: CGA11

Signature: 

8th Week:

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
.....				

Name:

Reg. No.

Class:

Signature:

9th Week:

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
.....				

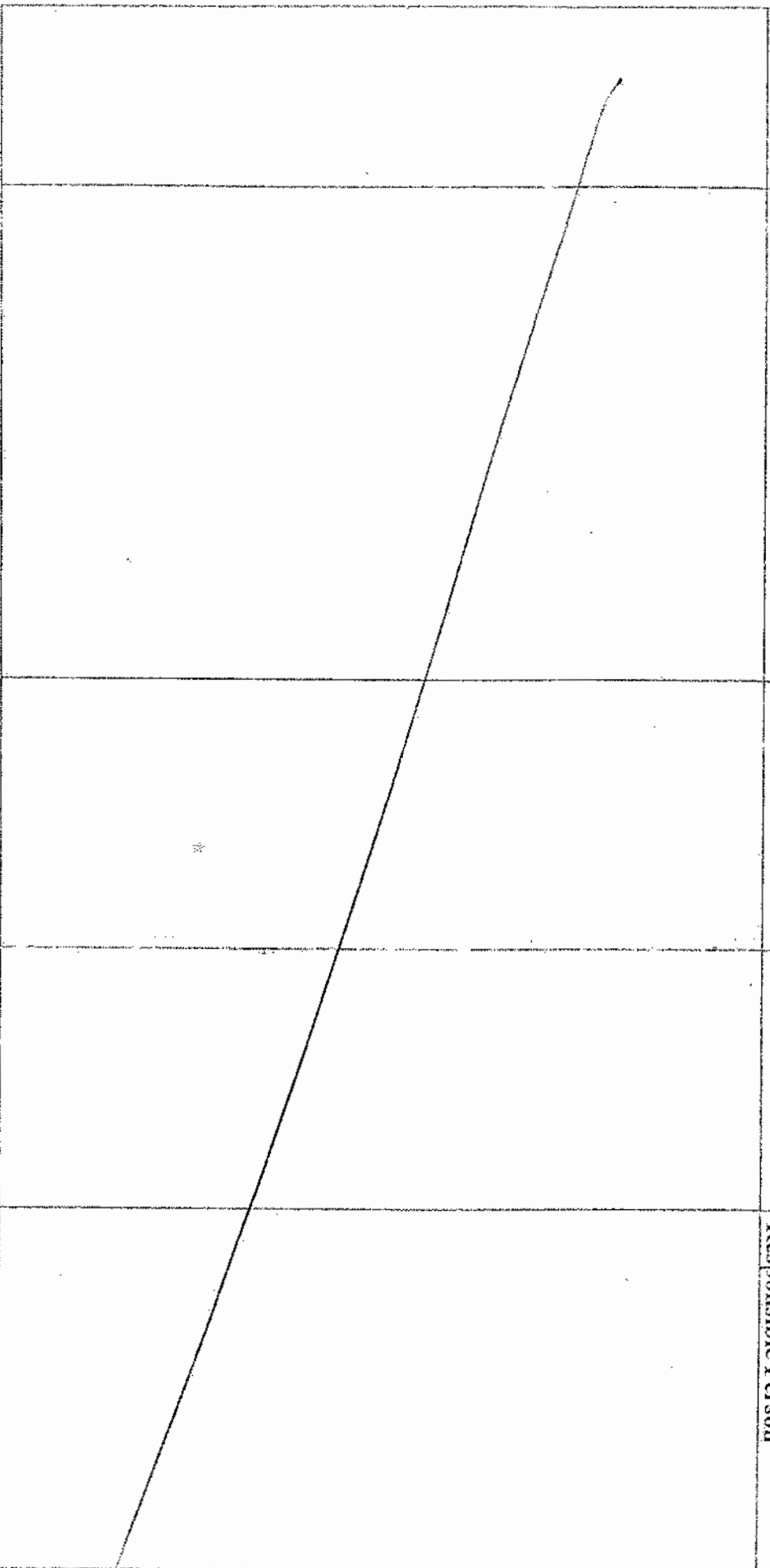
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10th Week:

Date	Activities Carried Out	Relevance of Activity to you as a Student	Participants	Comments and Signature of Field Supervisor/ Responsible Person
				

Name: Reg. No.

Class: Signature: