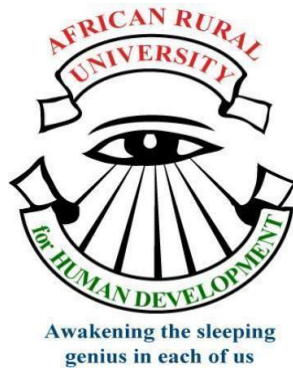


AFRICAN RURAL UNIVERSITY



FACULTY OF TECHNOLOGY FOR RURAL TRANSFORMATION

**END OF YEAR TWO FIELD ATTACHMENT ONE REPORT CONDUCTED AT RWEBITABA ZONAL
AGRICULTURAL RESEARCH DEVELOPMENT INSTITUTE IN KYEMBOGO VILLAGE, BUSORO
SUB-COUNTY KABAROLE DISTRICT**

BY

ATUHAIRWE KEVIINA

21/ARU/BSSA/003

A REPORT SUBMITTED TO THE FACULTY OF TECHNOLOGY FOR

RURAL TRANSFORMATION

IN PARTIAL FULFILLMENT FOR THE AWARD OF

A BACHELOR'S DEGREE OF SCIENCE IN SUSTAINABLE AGRICULTURE

OF AFRICAN RURAL UNIVERSITY

NOVEMBER 2023

Declaration.

I ATUHAIRWE Keviina do affirm that the information provided in this report has been a result of diligent attendance and a result of my work and has never been submitted in full or partial to any intuition for the award of a bachelor or a diploma.

Signature

.....*Attk*.....

ATUHAIRWE KEVIINA

21/ARU/BSSA/003

Date15/11/2023.....

Approval

This is to certify that ATUHAIRWE KEVIINA had a one month of field attachment training at Rwebitaba Zonal Agricultural Research and Development Institute and this is a true record of what she was able to be involved in under my supervision.

Agency Supervisor

Signature

Mr. Mugume Ronald

Date 16.11.2023



University Supervisor

Signature

Dr. Moses Kanyambindwa

Date 16/11/2023

Dedication

I dedicate this report to my parents Mr. Busiinge Gabriel Akiiki and Mrs Busiinge Evas Kaahwa Abooki who have always prayed for my success and their love, affection and efforts have been an inspiration to me. I also devote the work of this report to the honorable and respectable lecturers and teachers who have taught and supported me in developing my personality and professional competence. May the almighty keep blessing your works and may you live longer to testify my success.

I also commit this work to my esteemed uncle Mr. Abigaba Joseph Tinka who has always given courage and comfort to let me continue pursuing my career.

Acknowledgement

First and foremost I thank God who is the holder of my breaths and without His order nothing is possible.

I would like to express my sincere gratitude to my faculty supervisor and mentor Dr. Kanyambiddwa Moses who gave in his valuable time to raise chances for me to learn.

I acknowledge the staff and management of RWEBZARDI for offering me the opportunity to learn and do my field attachment from their place and also equipping me with the required knowledge, skills and experience during the period of one month.

In addition, I acknowledge the Human Resource Manager Agaba Hannington and Tumwesigye Dominic for the warm welcomes and generosity they gave me to make me feel at home and at peace and indeed RWEBZARDI became home.

Furthermore, my deepest thanks go to my Field Supervisor Mugume Ronald for the hard work and guidance, courage and commitment he showed.

More so, I have a set light and ever burning flame of gratitude to my loving parents that is Mr. Busiinge Gabriel Akiiki and Mrs Busiinge Evas Kaahwa Abooki for the love, care and support towards my academic elevation and success. I thank you so much.

Special thanks to URDT Farm Manager Mr. Tibaijuka Denis for the support in academia to effect my practical learning.

Sincere gratitude to the epicenter manager Kabarole District Nampewo Josephine who co-facilitated with me to the community the visionary approach and community action planning.

Special thanks to my uncle Abigaba Joseph Tinka for the continued advice, comfort and support towards my academic elevation and success.

Last words are scarce to express my feelings and indebtedness to my friends that is Arinitwe Loyce and Bukirwa Dimintria who have been there for me and stood with me from day one to the end of the field attachment. I will be forever grateful to you comrades.

Abstract.

This report is prepared with the purposes of evaluating the entire field attachment program that was conducted at RWEBZARDI for the period of four weeks. The purpose of field attachment was to get me experienced in the different agricultural activities through the hands on experience. Numerous activities were carried out under the various programs under supervision of the responsible personnel that was my field supervisor. I engaged in a series of activities including crop management agronomic practices, livestock management, aquaculture, apiculture and agroforestry. Through the trainings I engaged in, I was able to acquire a variety of skills, knowledge and experience the most exciting for me was banana management practices especially de-suckering, sucker pairing and planting. This report introduces the University and Organization duties and their roles, summary of the knowledge, skills and experiences obtained, the constraints faced and how they were overcome. The report also comprises of the great opportunities identified and also the recommendations to the Organization and the University as well as the conclusion.

LIST OF ACRONYMS AND ABBREVIATIONS

ARU	African Rural University
URDT.	Uganda Rural Development and Training program
ZARDIs.	Zonal Agricultural Research Development Institutes
RTSs.	Rural Transformation Specialists
NARO.	National Agricultural Research Organization
RWEBZARDI	. Rwebitaba Zonal Agricultural Research Development Institute
WHZ.	Western highlands agro-ecological Zone
e.g.	For example
etc.	etcetera
CAP	Community Action Planning
STC	Structural Tension Chart.
BSSA	Bachelor of Science in Sustainable Agriculture
NPK	Nitrogen Phosphate Potassium fertilizer
DAP	Di-ammonium Phosphate fertilizer

Table of contents.

Table of Contents

Declaration.....	Error! Bookmark not defined.
Approval	Error! Bookmark not defined.
Dedication	4
Acknowledgement	5
Abstract.....	6
LIST OF ACRONYMS AND ABBREVIATIONS.....	7
Table of contents.....	8
CHAPTER ONE	13
1.0 General introduction	13
1.1 BACKGROUND OF AFRICAN RURAL UNIVERSITY (ARU)	13
1.1.2 ARU vision	14
1.1.3 ARU Mission	14
1.1.4 Background of field attachment.....	14
1.2 Objectives of field attachment	15
1.2.1 General objective	15
1.2.2 Specific objectives	15
1.3 Back ground of Rwebitaba Zonal Agricultural Research and Development Institute (RWEBZARDI)	15
1.3.1 Mission.....	16
1.3.2 Vision.....	16
1.3.3 Goal.....	16
1.3.4 Mandate.....	16
1.3.5 Location	17

1.3.6 A MAP SHOWING THE LOCATION OF RWEBZARDI	17
1.4 Objectives of the organization	17
1.4.1 Target population	18
1.4.2 Products/ services offered by the organization	18
1.4.3 Sources of funding for the organization	18
1.4.4 Research programs at RwebitabaZARDI.....	18
1.4.4.1 Crop and natural resource program.....	18
1.4.4.2 The tea research	19
1.4.4.3 Agroforestry	19
1.4.4.4 Animal resources research program.....	19
1.4.4.4.1 The livestock project.....	19
1.4.4.4.2 Apiculture project	20
1.4.4.4.3 Fisheries and aquaculture project.....	20
1.4.4.5 Technology Promotion and outreach Programme.....	20
1.5 Core function of Rwebitaba ZARDI.....	21
1.6 Organizational and Management structure of Rwebitaba ZARDI.....	21
1.6.1 Human Resource and Administration section.....	21
CHAPTER TWO	23
2.0 Managemen of the internship exercise/ field activity programme.	23
2.0.1 Introduction.....	23
2.1 The Organization and its role.....	23
2.2 Duties performed by the department of placement	23
2.3 The status and role of the immediate supervisor, the university supervisor and the student.	24
2.3.1 Status and role of the immediate supervisor	24
2.3.2 The role of the University supervisor	24
2.3.3 Role of student	24
CHAPTER THREE	25
ACTIVITIES DONE	25
3.0 Introduction.....	25
3.1 Duties and responsibilities	25
3.1.1 Rice production	25

3.1.2 Planting (Namuche rice variety)	25
3.1.3 Cleaning the field;.....	25
3.1.4 Measuring the field;	25
3.1.5 Pegging;	25
3.1.6 Making planting lines;	26
3.1.7 Sowing;	26
3.1.8 Covering;.....	26
3.1.9 Fertilizer application	26
Rice growing in Mubuku irrigation scheme	27
3.2.0 Maize Gap filling	27
3.2.1 Reasons why some seeds may fail to germinate	28
3.2.2 Table 1 showing different varieties of maize, their corresponding maturity period and their expected yields per hectare	28
3.3 Farm lay out and land measurement	29
3.3.1 Finding the right angle of a field.....	29
3.3.2 Importance of farm lay out.....	30
3.4 Production of horticultural crops	30
3.4.1 Tomatoes.....	31
3.4.1.1 Nursery bed management.....	31
3.4.1.2 Transplanting;	31
3.4.2 Cabbages	31
3.4.2.1 Weeding;	31
3.5 Agroforestry and natural resources management.....	32
3.5.1 Introduction.....	32
3.5.2 Weeding of the coffee nursery bed;	32
3.5.3 Root pruning;	33
3.6 Banana production	34
3.6.1 De-suckering;	35
3.6.2 Sucker pairing;	35
3.6.3 Planting.	36
3.6.4 Banana management practices.	37
3.6.5 Rehabilitation and maintenance practices.....	38

3.7 Potato production	38
3.7.1 Factors to consider prior growing potatoes.....	38
3.7.1.2 Potato diseases.	39
3.7.1.3 Common Potato diseases (Scheufele, 2022)	39
3.7.1.3 Physiological Disorders	40
3.7.2 Pegging;	41
3.8 Cassava production	42
3.9 Animal husbandry	43
3.9.0 Livestock production	43
3.9.1 Cattle production.....	43
3.9.2 Milking.....	43
3.9.3 Procedure of milking.....	43
3.9.4 Mastitis detection and treatment.	44
3.9.5 Mastitis treatment.....	45
3.10.6 Procedure of treating mastitis.	45
3.9.7 Fundamental pillars of livestock production.....	46
3.9.8 Pasture management.	46
3.9.8.0 Pasture species at RWEBZARDI.....	46
3.9.8.1 Grass pastures.	46
3.9.8.2 Pasture legumes.	47
3.10 Aquaculture.....	47
3.10.1 Factors to consider prior fish farming.....	48
3.10.2 Fish species at RWEBZARDI.....	48
3.10.3 Measuring fertility of a fish pond.	48
3.10.4 Pond cleaning.....	49
3.11 Apiculture.	49
3.11.1 Factors that influence siting of an apiary.	49
3.11.2 Bee Casts.....	50
3.11.3 Bee species in Uganda.	50
3.11.4 Bee forage plants.....	50
3.11.5 Identification of bee casts.	51

3.11.6 Inspection of a bee hive	51
3.11.7 Bee hives.....	52
3.11.7.1 The traditional hives:	52
3.11.7.2 The improved hives.....	52
3.12 Community engagement.	53
3.12.1 The strategies for effective community engagement.	53
3.12.2 Community Action Planning. (CAP)	53
3.12.3 Structural Tension Chart. (STC)	54
3. 13 Experience, knowledge and skills gained.	56
3.14 Relevancy of theories learnt during lectures to the field work activities.	56
3.15 Special personal contribution to the organization	56
3.16 Problems encountered in the field activity and how they were dealt with.....	57
CHAPTER FOUR.....	58
4.0 Introduction.....	58
4.1 Recommendations.....	58
4.1.1 To the Organization.	58
4.1.2	59
To the University	59
4.2 Conclusion.	59
APPENDICES.	61
REFERENCES	65

CHAPTER ONE

1.0 General introduction

This chapter explains the background of African Rural University, field attachment, the host farm that is RwebitabaZARDI, purpose of field attachment, objectives of field attachment.

1.1 BACKGROUND OF AFRICAN RURAL UNIVERSITY (ARU)

ARU is a value based all women's university that provides transformational education to create effective change agents within an African context. ARU is located 1.5Km along Kagadi-Hoima Road, Kagadi town council in mid-western region of Uganda. The University was founded by Uganda Rural Development Training program (URDT) with the focus of providing women with necessary knowledge, skills and experiences to be effective Rural Transformation Specialists (RTSs).

ARU education curriculum applies 60%theory and 40% field practical. It focuses at enhancing students' self-discovery build confidence and lifelong learning through the principles of the creative process, systems thinking and sustainable development to foster rural development and sustainable societal change.

1.1.2 ARU vision

A value based all women's university that offers a professional discipline in technologies for rural development, enable students, staff and supporters have a shared vision and purpose.

ARU as an institution has governance and management systems that nurture and promote participatory decision making, transformational education, and training and endogenous knowledge development. Products which include community practice, publications and public lectures, library, RTSs and research based on the visionary approach.

It has professional staff, grounded in the in the principles of the creative process, disciplines of a learning Organization, the donor community that share similar philosophy of empowerment of rural people to self-reliance.

1.1.3 ARU Mission

The ARU for women provides transformational education to create effective change agents within an African context. ARU applies theoretical innovation, instruction and field practice so the ARU graduates can create conditions for people to improve their lives, transform the communities, awaken inherent leadership and increase their capacity for self-generating and sustainable change.

1.1.4 Background of field attachment

In a bid to fulfill the 40%practical and preparation for students in real life experience, in the last semester of the second year, students are prepared for one-month field attachment that is carried out at the selected farms or agricultural institutions (Organizations) in the different districts to apply the theoretical knowledge into practical results.

Field attachment is a mandatory program that is basically under the programme of Science in Sustainable Agriculture (BSSA) in the faculty of agriculture in ARU. It is a critical requirement for the award of a bachelor's degree in of science in sustainable agriculture at ARU.

The hands-on and professional experiences on the different aspects of the agriculture sector are given to students in their second year of academic study for one month which is field attachment. Field supervisors where the students are attached (placed) for their field attachment supervise and guide them additionally their academic supervisor from the University. The students then sense

and come up with a topic of research in their area of interest and where intervention is really needed to be done during their fourth year.

Later on a report summarizing the students' activities during their field attachment is written and compiled, presented to the faculty and submitted to the department of agriculture for assessment.

1.2 Objectives of field attachment

1.2.1 General objective

To put the theoretical knowledge from classrooms into practice through the hands on experience.

1.2.2 Specific objectives

- 1.To introduce and facilitate the creative life orientation through the visionary approach to the farmers and the entire community members.
- 2.To get exposed to life outside school and understand the world of working.
- 3.To enable me acquire knowledge, skills and experience in the agricultural field.
- 4.To enable me appreciate and recognize my career and profession.
- 5.To enable me understand and gain experience in working with the community.
- 6.To enable me identify a research topic.

1.3 Back ground of Rwebitaba Zonal Agricultural Research and Development Institute (RWEBZARDI)

RWEBZARDI is one of the Zonal Agricultural Development Research Institutions (ZARDIs) public institutions under the regulation of the National Agricultural Research Organization (NARO) of Uganda. NARO is the apex body for guidance and co-ordination of all agriculture research activities in the national agriculture system in Uganda. RWEBZARDI has two stations one in Kabarole district which deals in crops and other research programs the other one in Kyenjojo district which deals with a national mandate of tea research. The Kyenjojo station was the main tea breeding station for tea of East Africa before the collapse of the East African Community (EAC) in 1977 that led to the closure of research activities in Uganda leaving it in the hands of the government. The policy of establishing the research institute was aimed at addressing the Agricultural challenge in the western highlands of the agro-ecological zone (WHZ).

Rwebitaba as a ZARDI started its operations in October 2011 to serve as a zonal entity that undertakes applied and adaptive agricultural technology development and dissemination to different stakeholders in the Western Highlands Agro-ecological Zone. The study area is characterized by bimodal rains with two seasons; first season: March to June, second season: August to December with average rainfall of 1,623mm. The average temperature is 20.2 C° with humidity of 77% (Rwebitaba Meteorological Weather Station, 2021). RwebitabaZARDI operates in nine districts commonly known as the Western Highland Agro-ecological Zone and one city that is to say Fort Portal, Kabarole, Kyenjojo, Bundibugyo, Bunyangabo, Kasese, Kamwenge, Ntoroko, Kitagwenda, Kyegegwa districts and Fort Portal tourism city respectively. Other ZARDIs Include; MbaZARDI in Mbarara, Buginyanya in Bulambuli, AbiZARDI in Arua, MuZARDI in Mukono, BuZARDI in Hoima, NgeZARDI in Lira, NabwinZARDI in Moroto.

1.3.1 Mission

To improve agriculture productivity of farming communities of western highlands agro-ecological zone (WHZ) by conducting and disseminating appropriate demand driven and market responsiveness, strategical and adaptive research while enabling suitable natural resource management.

1.3.2 Vision

To improve livelihoods and income of resourceful power farmers through generating, disseminating profitable and sustainable technology to improve productivity of the farming systems in WHZ.

1.3.3 Goal

To enable NARO respond and contribute to sustainable agriculture productivity by conducting relevant research that enhance economic growth, food security and poverty eradication in the WHZ.

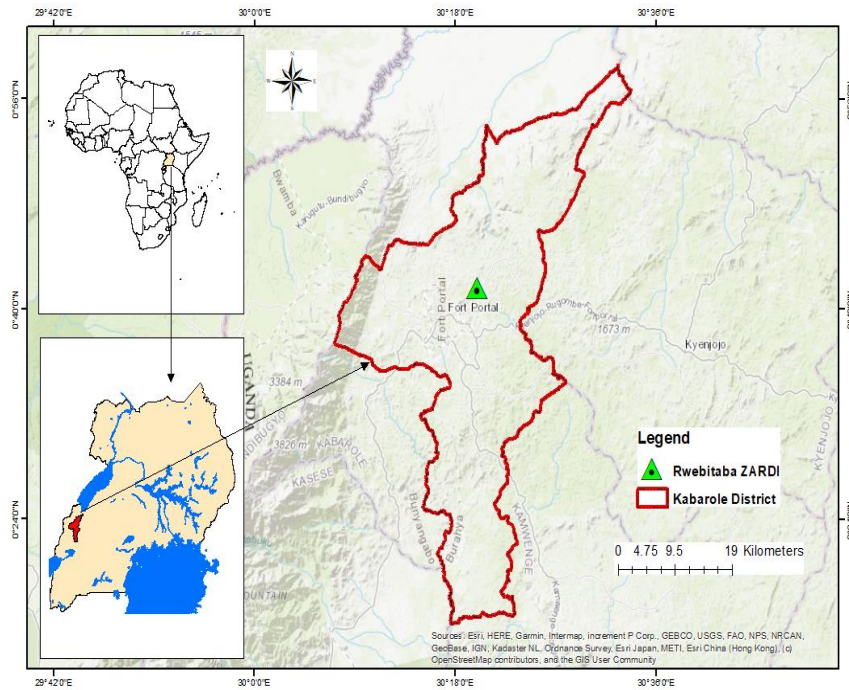
1.3.4 Mandate

To conduct demand driven and market responsive, applied and participatory adaptive research in crops, aquaculture, livestock, apiary to develop appropriate knowledge of dissemination to uptake ways by the farmers.

1.3.5 Location

Rwebitaba ZARDI is located in Kyembogo village, Busoro sub county, Kabarole district, Fort Portal-Kijura Road 12Km from Fort portal city.

1.3.6 A MAP SHOWING THE LOCATION OF RWEBZARDI



1.4 Objectives of the organization

- 1.To contribute to multiplication of foundation seed for distribution to farmers and other research partners.
- 2.To generate and disseminate tea technologies country wide.
- 3.To establish and strengthen collaboration and linkages in order to exploit synergy in research and uptake of technologies.
- 4.To comprehend constraints, opportunities and component interactions in the farming system of western highlands Agro-ecological Zone.
- 5.To conduct basic, applied and participatory adaptive research and generate appropriate technologies for dissemination to uptake path-ways.

6.To provide and process feedback between farmers, researchers, extension staff and other partners in order to identify and respond to zonal specific and immerging production and marketing constraints.

1.4.1 Target population

The target population of RWEBZARDI is the farmers in Kyembogo village and the WHZ entirely.

1.4.2 Products/ services offered by the organization

Training farmers.

Training internship students from different institutions and universities.

Conducts applied and adaptive research.

Provides improved planting materials.

1.4.3 Sources of funding for the organization

Government of Uganda.

Writing proposals to funding organizations.

Non tax revenue. This is got from the bi- products of research.

1.4.4 Research programs at RwebitabaZARDI

Crop and Natural Resources Research Programme

Livestock Resources Research Programme

Technology Promotion and outreach Programme

1.4.4.1 Crop and natural resource program

This section covers research and improvement on different crop varieties and seed multiplication. Research and multiplication is done on crops like cassava, potatoes, seed maize, beans and soya bean, banana sucker multiplication, different vegetable crops such as cabbages and tomatoes. The research is headed by an agronomist (agronomy scientist) supported by a technician and a volunteer.

1.4.4.2 The tea research

As earlier on said that RWEBZARDI was originally into tea research, the organization therefore still holds a mandate to conduct research in tea and this is in a special way conducted from Rwebitaba Kyenjojo Tea Station. The organization conducts research about different pests, pathogens and diseases that infest and infect tea forests and how susceptible or resilient the tea plants are. The research also goes to identifying the different tea clones and how they suit geographically, breeding tea clones, to mention but a few.

1.4.4.3 Agroforestry

This section entirely looks at conserving the environment, the different tree species and varieties. Tree fruits such as avocados like HASS Avocados, mangoes, apples, oranges are bred. The indigenous tree species such as Mvule, musisi, marhogany are also managed. Coffee plants are also bred. Grafting is always done to improve the traits of the different tree species for instance to improve the fruit sizes, to attain shorter fruit trees for easy harvesting among others.

1.4.4.4 Animal resources research program

Under this section, the livestock project, aquaculture specifically fish farming and apiary projects are implemented at the farm.

1.4.4.4.1 The livestock project

Research on livestock animals particularly cattle and goats is done and the breeds are the cross breed of cattle and Boer goat respectively. Improved pasture varieties are also grown both leguminous and grass pastures for instance alfalfa, caliantra, sesbania sesban, lablab, Greenleaf desmodium, silver leaf desmodium, centrosema for the legume pastures and chloris gayana, Napier grass, NARO Napier, sugar Napier, Branchiaria, Kikuyu grass, for the grass pastures. This is entirely to improve nutrition of the livestock to increase their yields in form of milk production for the dairy cattle and meat for goats. The section is headed by a research officer who is also an animal health scientist/ head of program animal resources.

1.4.4.4.2 Apiculture project

Research in apiculture is to investigate the appropriate technologies for increased apiculture production in the zone. Efficiency of different bee hives (KTB, Langstroth bee hives, Log bee hives, Weaved bee hives) on colonization and honey yield looking at quality and quantity, both on-station and on-farm. This investigation is being undertaken in different districts of the WHZ. Different types of bee forage (*caliandra calorthyrus*, *ocimum species*, and *citrinus carlistermons*) being evaluated on suitability, nectar and pollen production. The project has more activities in stingless bees. Apiculture project is actively involved in research project titled “Domestication of stingless bees in Uganda”, this project intends to identify, multiply, domesticate, characterize stingless bees, developed high value stingless bee products, design appropriate hive technologies, design protocols of harvesting stingless bee products, evaluate which stingless bee species is good for which product and commercialize stingless in Uganda. The section is headed by the apiculture scientist who is also the director of research, and with the support of the apiculture technician and a volunteer is also attached on this project.

1.4.4.4.3 Fisheries and aquaculture project

Basic, applied and adaptive research is being carried out to generate appropriate technologies to improve fish production in the WHZ. On-going data collection on feeding strategies, fish breeding and establishment of base population of pure lines of Nile tilapia in earthen ponds to improve fish production in the zone. On-station fish breeding in earthen ponds is carried out under seed multiplication to avail quality seed to fish farmers who lack access to quality stock in the zone. The section is headed by the Aquaculture Scientist assisted by the Aquaculture technician, all under the head of program Livestock research resources program.

1.4.4.5 Technology Promotion and outreach Programme

This programme is responsible for taking out the generated technologies to final beneficiaries for adoption. It looks at socio-economics, social cultural aspects of the communities on the technologies and trends in the WHZ. It links up different stakeholders in agricultural socio-economic related activities. These include; policy formulation, gender issues, social issues, marketing of agricultural produce and the trend of commodities in the market, value chain analysis and conducting farming systems and livelihood surveys for all the units. This is headed by the socio-economist scientist assisted by a rural sociologist.

1.5 Core function of Rwebitaba ZARDI

To comprehend constraints, opportunities and component interactions in the farming systems of Western Highlands Agro-ecological Zone.

To conduct basic, applied and participatory adaptive research and generate appropriate technologies for dissemination to uptake path-ways.

To contribute to multiplication of foundation seed for distribution to farmers and other research partners.

To establish and strengthen collaboration and linkages in order to exploit synergy in research and uptake of technologies.

To provide and process feedback between farmers, researchers, extension staff and other partners in order to identify and respond to zonal specific and emerging production and marketing constraints.

1.6 Organizational and Management structure of Rwebitaba ZARDI

The management structure comprises of 35 staff members. Among them include 12 research scientists, 9 research technicians, and 14 support staff

1.6.1 Human Resource and Administration section

Human resources

This section coordinates planning of human resource and administrative activities like; staff recruitment, training of workers, welfare, corporate responsibility, and ethics required as per job description and specification, among others issues. It is headed by the human resource and administrative officer. Human resource and administration include the finance officer, accounts assistants, cashier, procurement, internal auditor, inventory officer and locally recruited staff as illustrated below.

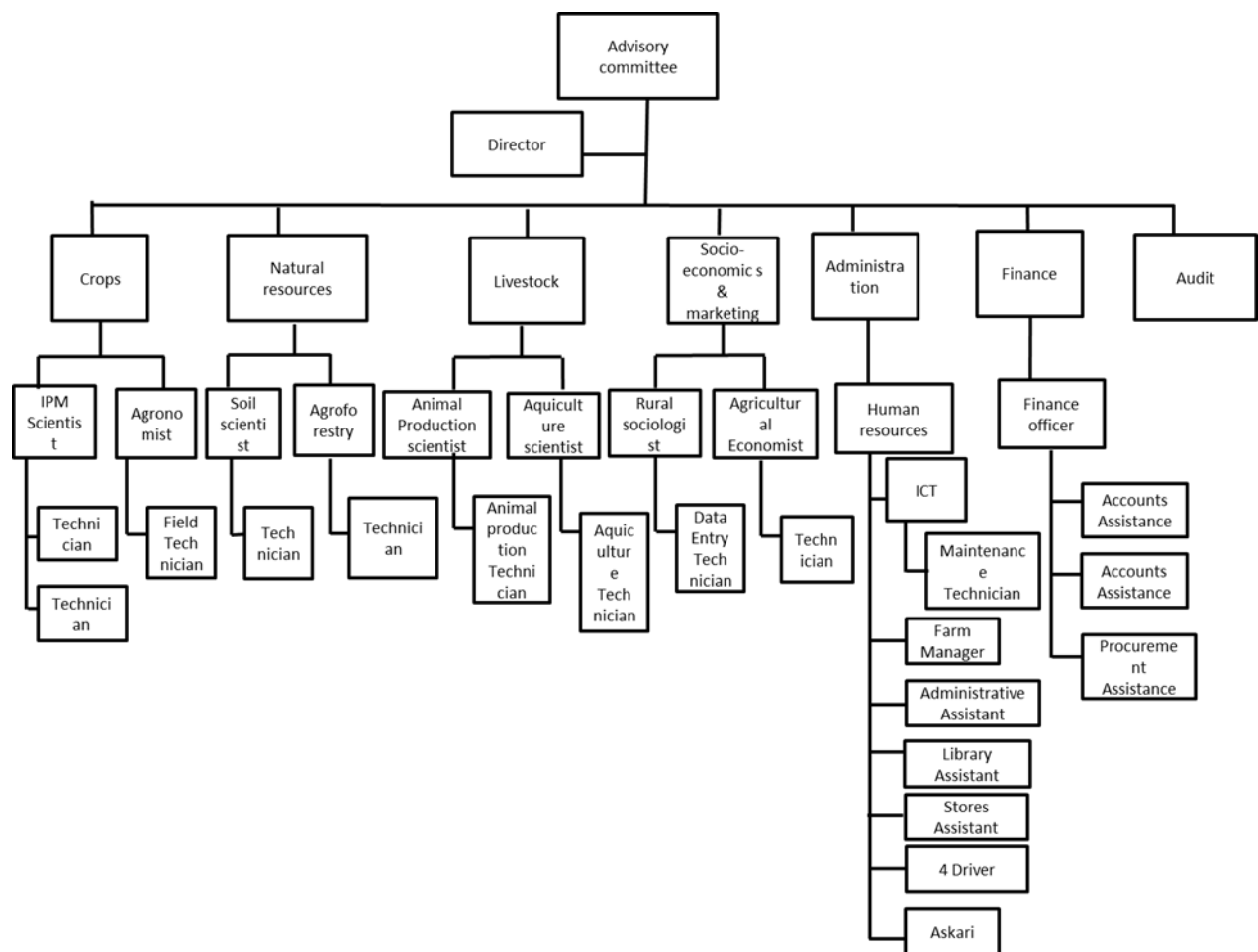


Figure 1 plate structure of Rwebitaba ZARDI

CHAPTER TWO

2.0 Management of the internship exercise/ field activity programme.

2.0.1 Introduction

This chapter is giving high lights on how the field attachment was conducted, the key roles and responsibilities played by the different stake holders in the field that is the host organization, the field supervisor, the university supervisor and the student.

2.1 The Organization and its role

Producing improved seeds.

Ensuring food security.

Training farmers in improved agricultural/ farming practices.

Demonstration farms

Extension work.

Carryout applied and adaptive research.

2.2 Duties performed by the department of placement

Producing improved seeds.

Conducting applied and adaptive research.

Offers training to farmers

Offers training to internship students

Provides food to refugees for instance in Kyaka

Making improved seeds available to the farmers in the WHZ.

2.3 The status and role of the immediate supervisor, the university supervisor and the student.

2.3.1 Status and role of the immediate supervisor

The immediate supervisor drafted a working timetable that was to be followed and guide our working schedules for effective learning.

Made sure his delegates and the trainers on the time table attended and facilitated because he had health matters.

Guidance and corrections were made by the immediate supervisor.

2.3.2 The role of the University supervisor

Guidance on how to handle and conduct myself during the course of field attachment.

Linkage of student and organization of placement.

Linkage of immediate supervisor and student.

2.3.3 Role of student

Attending trainings.

Net working with the scientist in the different departments.

Attending to the assigned work and activities.

2.4 Methods used

Hands on

Lectures.

Field execution.

Observation.

Community Action Planning. (CAP)

CHAPTER THREE

ACTIVITIES DONE

3.0 Introduction

This chapter explains the various activities I were engaged in, how they were operated, knowledge, skills and experience gained, relevancy of theories learnt during lectures to the field activities, special personal contribution to the organization and problems encountered in the field work activity and how they were overcome.

3.1 Duties and responsibilities

3.1.1 Rice production

Rice is a cereal Crop under family Poaceae. In rice production, I was engaged in planting and manure application.

3.1.2 Planting (Namuche rice variety)

Namuche rice variety was planted in Bunyangabo district due to the favorable soil and climate factors which are black fertile soils and receives enough rainfall with relatively hot temperatures. Namuche rice is preferably planted in lowland areas and has a maturity period of 3-4 months. However, the maturity period highly depends on the weather conditions of an area for instance in Bunyangabo it takes 4 months, 3 months in Kasese and 6-8 months in Rwebitaba Kyembogo. Prior planting rice the following activities were carried out.

3.1.3 Cleaning the field; this was done by collecting and removing plant debris and any other particles from the field using a rake and hoes to leave a fine tilth that makes the making of planting lines easier and also facilitates germination.

3.1.4 Measuring the field; to determine the size of the field and amount of seeds to be planted and expected yield at harvesting. This was done using a tape measure and ropes to determine the meters.

3.1.5 Pegging; this was done on marked notes of the field after measuring the required meters for easy identification of the end marks and in the making of planting blocks. The spacing of the blocks was 50cm leaving a space of 5cm from one block to the other.

3.1.6 Making planting lines; this was done using a garden fork which was loaded with a banana stem to increase its weight for movement. A garden fork is used to ensure straight planting lines for easy management of field operations such as fertilizer application, weeding and harvesting.

3.1.7 Sowing; rice was planted in lines made at a spacing of at least 2cm.

3.1.8 Covering; the planted rice seeds were covered with light soils but ensuring the whole field is entirely covered with no rice grain left out to effect germination and control birds as pests respectively.



Lining and planting of rice.

3.1.9 Fertilizer application

This was done at Mubuku irrigation scheme in Kasese District in three rice plots (fields) each an acre. The variety on to which the fertilizer was applied was NERICA4 where the fertilizers applied were DAP (Di-ammonium phosphate) and Urea by top dressing. The fertilizers were directly placed in to the rice ridges. DAP has the following uses

Boosts plants overall growth and development.

Increases soil nutrient absorbing capacity.

Increases soil water and nutrient retention.

Importance of Urea.

Urea provides Nitrogen and improves the leafing and flowering ability of the plants as well as photosynthesis.

Fertilizer application in rice is preferably done on the tillering stage and flowering stage which is panicle formation.

Rice growing in Mubuku irrigation scheme is supported by the waters from Mubuku and Nyamwamba rivers. The irrigation method used is gravitational water flow (flooding) particularly furrow irrigation to facilitate free flow of water. Rice is grown on the ridges and water is left to flow through the ridges.



Fertilizer application

3.2.0 Maize Gap filling

Maize (*Zea mays*) is a cereal crop that belongs to the family Poaceae and it is planted for its edible grain that is eaten in different forms such as boiled maize and roasted maize. A number of products can be extracted from maize such as maize flour from which feed forms such as posho, porridge for human consumption and maize bran which is especially for livestock feeds. Maize has a maturity period of 4 months (120 days) however it highly depends on the variety grown. Gap filling was done on seven (7) varieties each on an independent block covering an area of three (3) acres. The varieties included Pannar, Bazooka, Longe5, Kipeke, Longe6, DK90-89 and DKC777. The spacing was 75cm x 30 cm for two seeds and for one seed, the recommended spacing is 75cm x 25cm. It was observed that certain varieties had performed better than some other varieties where

by the spaces for gap filling per block varied depending on the variety. The Pannar block performed best and Kipeke block performed worst. At RWEBZARDI, seed maize is grown for research purposes, breeding and also providing seed.



Maize gapfilling.

3.2.1 Reasons why some seeds may fail to germinate

Pre mature embryos and therefore cannot germinate.

Damaged embryos by pests such as weevils and physical damages.

High moisture content of the seeds that causes them to rot instead of germinating.

3.2.2 Table 1 showing different varieties of maize, their corresponding maturity period and their expected yields per hectare

Type of seed maize	Maturity length (days)	Expected yield (tones)
Longe 5	100-115	Yields 2-2.5
Longe 6	100-115	2-2.5
Pannar	120-135	2-2.5

Bazooka	120-140	3-4
Kipeke	120-140	3-4
DK 90-89	140	2.8-3.2
DKC 777 (triple 7)	140	2.8-3.2

3.3 Farm lay out and land measurement

3.3.0 Pasture establishment

Farm lay out involves the allocation of different fields with respect to the purpose, size, shape and number of fields required.

A pasture land was planned and therefore land was measured to determine its size and where corresponding pasture species were to be planted which included chloris gayana, caliandra, Sesbania sesban, Measurement was done using pegs, ropes and a tape measure using a method of a right angled triangle by the Pythagoras theorem by the use of sides 3, 4,5 by the base, opposite and hypotenuse respectively to find the right angle.

3.3.1 Finding the right angle of a field

Place a rope to produce the base line and mark the corner positions A and B.

Measure the distance between the two points. This was done using a tape measure to determine the distance between the two points. The base was 35cm and the opposite 47cm making the hypotenuse 72cm (sum of the base and opposite).

The area of the field was measured using the method length X width (LxW)

AREA= LXW

$A = (35 \times 47) \text{ cm}$

$A = 1645 \text{ square meters.}$

When the base is measured and the height, the tape measure is stretched to ensure that it joins and forms a triangle but maintaining it at the right angle. In case it fails to join, a constant is added or multiplied on all the sides.

3.3.2 Importance of farm lay out

Agro tourism, it portrays an appealing view and a beautiful scenery.

It makes field operations and management practices easy e.g., manure application, weeding, etc.

It makes routine work easier since the farmer or any other personnel does not have to always trace for the enterprises on the farm.



Finding the right angle of the field

3.4 Production of horticultural crops

Under horticultural crop production and management, I was engaged in oleiculture which is the growing of vegetables. Various activities were carried out under different vegetable crops which included tomatoes, cabbages and carrots and emphasis was put on tomatoes, cabbages. The following activities were done.

3.4.1 Tomatoes

Tomatoes are large rounded, edible, pulpy berry which is eaten as a salad or used as a spice.

Tomatoes are from genus solanum of the night solanaceae family (night shed family).

3.4.1.1 Nursery bed management

Constructed nursery bed shed as one of the care given to seedlings in a nursery bed. The variety was padema and the spacing was 1m x 5m. However, a nursery bed could be 1m x infinity. Tomatoes spend 3-4 weeks in a nursery bed prior transplanting and the maturity period after transplanting to the main garden is 75 days with a spacing of 75x 75 cm in the main garden.

3.4.1.2 Transplanting; this is the transfer of seedlings from the nursery bed to the main garden (seedbed). This was done during the late hours of evening due to the favorable cool temperatures that help the seedlings adjust to a new environment for a longer time.



Tomato planting

shade construction on a tomato nursery

3.4.2 Cabbages

Cabbage is a round vegetable with large white, green or red-purplish leaves which belongs to Brassicaceae. It can be eaten as a salad or cooked.

The variety dealt with was indicia F1

3.4.2.1 Weeding; weeding was done in a nursery bed to facilitate proper growth of the seedlings and ensure health seedlings. The time length from planting in a nursery bed to transplanting is 3-

4 weeks. Weeding was also done in the main garden. The maturity period after transplanting is 75 days.



Weeding cabbage in a nursery bed

weeding cabbage in the main garden

3.5 Agroforestry and natural resources management

3.5.1 Introduction

Agroforestry is a land use management system in which combinations of trees, or tree shrubs are grown around or among crops or pasture land. Agroforestry combines agriculture and forestry technologies to create more diverse, productive, profitable, health and sustainable land use systems.

Under agroforestry I was engaged in the following activities.

3.5.2 Weeding of the coffee nursery bed; this was done in order to reduce competition for growth factors between the coffee and the weeds like, sunlight, space and soil nutrients for growth and development.



Weeding coffee in a nursery bed after weeding the nurseries

3.5.3 Root pruning; roots of mango seedlings in a nursery bed were cut short using a socatua to prevent from establishing and developing firmly before being transplanted to be planted permanently in the main gardens.



During root pruning of

Watering after root pruning the mango seedlings

3.5.4 Preparation of potting soils and potting

Soil was sieved to eliminate the foreign materials and trash such as plant debris, large soil rocks until a fine feel of soil was formed. Five wheelbarrows of soil were sieved.

Sandy soil was also collected which was a quantity of one wheelbarrow.

Later on also obtained a wheelbarrow of organic manure.

Soil, sand and organic manure were mixed in a ratio of 4:1:1 respectively.

Sand was added to improve the soil texture and structure so as to improve soil factors such as aeration, water filtration and percolation to the deeper layers after being incorporated into the pot bags.

The organic manure was to improve soil fertility and boost nutrient availability to feed the tree.

Finally, the mixture of soil, Sand and manure was incorporated into the potting bags.



3.6Banana production

Banana growing is one of the major enterprise and crops grown in Kabarole District and the entire WHZ. Therefore NARO through RWEBZARDI has put emphasis on improving banana varieties, extending the knowledge to the farmers for improved food security in the region.

Banana is a perennial plant that belongs to the family Musaceae (Musa SSP).

The banana varieties at RWEBZARDI are both indigenous and improved ones which include the following, Mpologoma, Kibuzi, Kitika, Bishop, NAROBan, Kisansa, Bogoya.

By Hands on.

3.6.1 De-suckering; this is the removal of excess suckers from the banana plant area to maintain the appropriate plant density and reduce competition for growth factors such as sunlight, soil nutrients and space. This ensures that the remaining plant suckers bear a reasonable banana bunch. Three plants are recommended to be left on each banana plant that is to say, the mother, one daughter and a granddaughter.



De-suckering

For planting, the sword suckers were uprooted using a panga and hoe. The sword suckers are preferably planted other than the water suckers that are susceptible to pathogens, pests and diseases.

3.6.2 Sucker pairing; this refers to all the activities done to ensure that the sucker is entirely clean and smart prior planting.



Sucker pairing

3.6.3 Planting.



Digging the hole

covering the hole in which the sucker was planted

Digging a hole; this was done using a hoe at a width of 3ft and a depth of 2ft and a spacing of 3mx3m

Filling soils into the hole; the black soils were put first into the hole and then the sucker put onto that layer and thereafter the sucker covered entirely to the top with the black fertile soils.

Mpologoma variety was planted.

By lecture.

3.6.4 Banana management practices.

These practices are classified as establishment and rehabilitation practices.

The establishment practices include the following.

Open up the land and clear off the vegetation in the selected area.

Plant some cover crops such as legumes to make the field fine and nutritious before receiving suckers on planting.

Thereafter, dig holes at a spacing of 10ftx10ft-12ft depending on the fertility levels of the soil. For very fertile soils, the spacing is recommended wider compared to the areas with less fertile soils.

The holes should be 3ft wide and 2-3ft deep. The top (black) soils should be separated from the red soils since the black soils are more fertile than the red ones.

Manure application; the manure to be applied is mixed with the top soil before planting and left to decompose for about 1-2 weeks before planting.

De-suckering; there are two types of suckers that is sword suckers and water suckers. Sword suckers are the ones that have a sword like structure and water suckers are the ones quite far away from the mother plant. The sword suckers are preferable to be planted since they have been taken care of by the mother and therefore very healthy other than the water suckers that have grown alone in space and therefore have issues such as pathogens, pests and diseases.

Sucker pairing; this involves the entire cleaning and preparation of a sucker for planting. It involves activities such as cutting the sucker to the recommended size (height) is 1ft that is equivalent to the height of a palm whose top are cut slanting to prevent rains from hitting directly the heart of the sucker. Sucker pairing is done to ensure clean planting suckers, disease, pest and pathogen free to avoid their transfer to other new and free fields.

The suckers to be planted should be uprooted and cleaned a week before planting time to allow sterilization. In a similar way, suckers can also be soaked in warm to hot water for 30seconds to kill pathogens.

3.6.5 Rehabilitation and maintenance practices.

Weeding; the removal of plants growing out of place. It is done to control competition for growth factors such as nutrients, soil moisture and space between the banana plants and the weeds.

Fertilizer application to boost soil fertility and nutrient availability

De-suckering; the removal of excess suckers to reduce competition. The mother plant, daughter and granddaughter are left.

3.7 Potato production

By lecture.

The potato is a starchy food, a tuber of the plant *Solanum tuberosum* and is a root vegetable. The plant is a perennial in the nightshade family Solanaceae. Potato is also commonly known as Irish potato.

3.7.1 Factors to consider prior growing potatoes.

1. Seed selection.

The seeds to be planted should be disease free, no damages.

It should have many buds to boost the shoot system that is to say many stems imply many tubers.

It should be of a recommended size that is to say more than an egg size.

2. Site selection. Soil types, well drained soils, raised area (land). It should not be in a valley neither lowland.

3. History of the area; the chosen site for growing *Solanum* potatoes should not have hosted any crop from the solanaceae family for at least 2 years before, for example eggplants, tomatoes, sweet potatoes, Nakati among others because they share the same soil nutrients, pathogens, pests and diseases.

4. Land preparation; slashing, tillage (primary and secondary tillage)

5.Field marking and pegging; to ensure accuracy in spacing, effectiveness in field management practices such as weeding, fertilizer application.

6.Field marking is also to enable a farmer determine how many seeds are needed in an area of land for instance an acre and how much to harvest that is the expected yield.

7.Planting; solanum potato is planted in ridges at a spacing of 75cmx30cm ft.

8.Fertilizer application is also done at planting where NPK triple 17 (17,17,17).

NPK aids in leaf formation, initiates flowering and tuber formation. The fertilizer is applied at a depth of about 15cm. A soda bottle top full of fertilizer i.e. 500gms is applied per hole.

9.Weeding and earthing up; weeding is done to eliminate chances of competition between other plants and the grown potatoes for growth factors such as soil nutrients, water and sunshine. More so, the weeds would act as hosts for pests and vectors that would in the end yield losses or increase the costs of production.

10.Pest and disease management; a number of fungicides are used to prevent and also cure the fungal diseases in potatoes.

3.7.1.2 Potato diseases.

They are classified as seed borne diseases, soil borne diseases, fungal diseases.

Seed borne diseases

Soil borne diseases

Fungal diseases

3.7.1.3 Common Potato diseases (Scheufele, 2022)

Fusarium dry rot causes internal light to dark brown or black dry rot of the potato tuber. The rot may develop at an injury site such as a bruise or cut. The pathogen penetrates the tuber, often rotting out the center

Early blight usually affects potato foliage but tuber infections can also occur. Tuber lesions are dark, sunken, and circular often bordered by purple to gray raised tissue. The underlying flesh is dry, leathery, and brown. Lesions can increase in size during storage and tubers become shriveled.

Pink rot infections start at the stolon end and result in rotten and discolored periderm with a clear delineation between healthy and diseased tissue. When exposed to air, tuber flesh turns pink and then brown-black. *Pythium SSP* that cause leak infections invade tubers through harvest wounds and continue to develop in transit and storage.

Late blight affects potato foliage and tubers. Foliar symptoms start with brown to black, water soaked lesions on leaves and stems which produce visible white sporulation at the lesion margins under humid conditions whole plants and fields may collapse rapidly. Tuber infection is initiated by sporangia from foliage being washed down into the soil and usually begins in wounds, eyes, or lenticels. Lesions are copper brown, red or purplish and white sporulation may occur on tuber surfaces in storage or cull piles. Infected tubers are susceptible to infection by soft rot bacteria which can turn entire bins of potatoes in storage into a smelly, rotten mass

3.7.1.3 Physiological Disorders

Black Heart is caused by lack of oxygen during storage which causes the tissue to die from the inside out and turn black. The condition is not reversible but if you notice it quickly and correct your storage conditions you can prevent the whole crop from being affected.

Brown Center and Hollow Heart are internal physiological disorders of potato which often occur together. Brown center is an area of dead pith cells which turn brown, while hollow heart is a star- or lens-shaped hollow area in the center of the tuber sales. Both disorders are related to stress, and occur at a higher incidence when growing conditions abruptly change during the season. Brown center and hollow heart likely form during tuber initiation but could also form during tuber bulking. If the disorder occurs during the early part of the season, then it is most often preceded by brown center and forms in the stem-end of the tuber, while late-forming hollow heart usually occurs near the bud-end with no brown center symptoms occurring. Conditions such as when soil temperatures are less than 56°F for 5–8 straight days, or when available soil moisture is greater than 80% cause brown center to start forming. Incidence of brown center and hollow heart also increases with

periods of stress caused by high or low soil moisture, especially if heavy rains occur suddenly after a dry spell. Large tubers are more prone to develop the disorder, so using closer spacing and making sure not to have too many skips in the row can reduce incidence of brown center and hollow heart. There are also differences in the susceptibility of potato varieties: 'Atlantic', a widely grown potato for chip processing, is relatively susceptible to both disorders. In 'Russet Burbank', susceptibility to both brown center and hollow heart is highest soon after tuber initiation when the tubers are small.

11.De-haulming; this is the removal/ cutting off/ slashing of the leaves of the potatoes to cease seed tuber growing and initiate and encourage intact of the seeds or tubers of the potatoes to allow harvesting. This is done after 90days of planting.

12.Harvesting; it is done between 90-140 days depending on the variety. Harvesting is done using a garden fork or a hoe inserting it into the soil straight at least a foot away from the first plant and then slowly working throughout the bed.

An acre of Irish is expected to give a yield of 50bags or 15tonnes which is the average yield.

By hands-on.

3.7.2Pegging; this was done to mark out the field accurately to determine the size of the field, the quantity of seeds required for planting, the expected yield at harvesting and also mark out where the definite ridges were to dug out with respective spacing.



3.8 Cassava production

Cassava is one of the root crops grown for its edible tuber. Cassava is commonly known as *manihotiesculenta* and belongs to the family *Euphorbiaceae*. The cassava varieties at RWEBZARDI include, NAROCASS1, NAROCASS2, Mukumba, Aladolado, Njule red.

Under cassava production, gap filling of NAROCASS1 was done in the established field at a spacing of 1mx1m to ensure uniformity of the field and ensure the expected production from the acres that were planted. The planting method used was by placing the cassava stem vertically (straight) into the hole to enable the newly planted cassava grow and catch up with the height of the already established one for uniformity. Majorly, the cassava planted was to provide stems for distribution to the farmers. Cassava has a maturity period of 3 months (90 days)



Cassava gap filling

3.9 Animal husbandry

3.9.0 Livestock production

3.9.1 Cattle production

This refers to the rearing of cattle for different purposes that is milk production, beef production, or duo purposes.

At RWEBZARDI, dairy farming is done. The breed of cattle is the Friesian cross breed.

3.9.2 Milking

Milk was drawn from the cows' teats manually (using hands) and it was done twice on a daily basis that was early in the morning and in the evening at 3:00pm.

The cows that were being milked then were four that is to say, RWEB18 (AMOOTI), RWEB KETTIE, NYANGOMA and MARION. Each cow produced 4litres per milking therefore 16ltrs were collected per milking and 32ltrs per milking day.

3.9.3 Procedure of milking.

1. Provide a low-stress environment for cows in the milking parlor.

2. Provide feeds (fodder or pastures) like hay, silage or fresh pasture to keep the cow busy and maintain it in mood.

3. Check both the fore and rear teats milk and udder for mastitis.

4. Wash the teats with clean water or even warm to stimulate the cow for milk secretion.

5. Dry teats completely with an individual towel.

6. Apply the milking Vaseline that is oil milking salve for smoothness to avoid chances of damaging the teats.

7. Start the milking by pulling one teat down and the other one up until milking is done.

Milking should be done uniformly that is the same milking hours of the day on the various days.



Milking

3.9.4 Mastitis detection and treatment.

During the evening shift of milking, changes in color of AMOOTI's milk which had deviated from the normal color with blood stains was realized and therefore reported the case to the livestock personnel.

Mastitis detection; milk was drawn onto a clean black gumboot to easily identify the blood stains and color deviation. The first milking showed yellowish color due to the puss and the second milking showed up with blood.

3.9.5 Mastitis treatment. On the first day of treatment, intra mammary tubes which contain penslin were administered into the infected teats. The following day, an injection of oxytetracelinewas administered every after milking in the morning and evening. And this was to be done until milk normalized.

3.10.6 Procedure of treating mastitis.

Milk the victim (sick cow) like usual on a uniform schedule from the milking parlor and in a different container.

Allocatethe cow into the crush for medication.

Insert the intra mammary tubes into the teats or administer an injection.

Rubthe cow's skin (hide) strongly to avoid chances of swelling.

Let the cow out of the crush.

Dug a hole away from the cattle kraal,crush and milking parlor.

Pourthe milk into the hole and cover thoroughly.

Wash the container thoroughly with clean water and soap and pour the substance away.

The procedure was to be repeated until the cow's milk got back to normal.



Mastitis treatment

3.9.7 Fundamental pillars of livestock production.

For a farmer to realize profits, the productivity on his farm should be high but with less costs of production and below are the key points in production.

Nutrition/ feeding.

Housing/ infrastructure.

Breeding/ reproduction.

Health/ disease control and prevention.

Production.Hence productivity.

Production is the total quantity produced and productivity is production per unit area.

3.9.8 Pasture management.

3.9.8.0 Pasture species at RWEBZARDI.

Pastures are fodder for animals. They are fed to ruminant animals that is cattle and goats. They

Can be fed as to animals in form of hay, silage and fresh by the cut and carry method.

Pastures are divide into two that is grass pastures and legume pastures.

3.9.8.1 Grass pastures.

These are the energy giving feeds that provide carbohydrates. They belong to the family poaceae.

The grass pastures at Rwebitaba ZARDI include the following.

1.Chloris gayana (Rhod's grass)

2.Brinchiaria; this has two species that is

a) Branchiaria brizatha which is the indigenous with hard rough stems and leaves.

b) Branchiaria molato with soft stems and leaves.

3. Pakchong

4. Napier grass; this also has two types

a) indigenous Napier which is characterized by narrow leaves.

b) NARO Napier characterized by broad leaves (improved Napier)

4. Sugar Napier

3.9.8.2 Pasture legumes.

These provide proteins which are body building nutrients.

The legume pastures include the following.

Alfalfa.

Lablab

Sesbania sesban

Greenleaf desmodium

Silverleaf desmodium

Glycine

Centrosema

Calliandra

The legume pastures provide protein nutrient whereas the grass pastures provide carbohydrates and both pastures provide vitamins to livestock. In a similar way, livestock also get vitamin from sunshine energy.

3.10 Aquaculture.

Aquaculture is the rearing of aquatic life such as fish, crocodiles. Particularly, fish farming is done at RWEBZARDI.

Fish farming refers to the rearing and managing of fish under controlled conditions that is temperature, oxygen and PH.

3.10.1 Factors to consider prior fish farming.

1. Selection of a suitable site for pond construction and position.
2. Topography, the gravitational flow of water.
3. Soil type.
4. Source of water and water quality.
5. Accessibility.
6. Market demand.

3.10.2 Fish species at RWEBZARDI.

Tilapia.

Cat fish.

Fish food.

Pellets.

Planktons.

Forage.

3.10.3 Measuring fertility of a fish pond.

This was done using acechi disk with two surfaces one dark and the other grey tied on a marked rope in centimeters. The marks help determine whether the water level is increasing or decreasing. When the water level is below 25cm it implies fertility of the water and when the water level is above 30cm it implies infertility of the pond waters and when the water level is between 25-30cm

the water is fertile and favorable for fish growth. On measurement, the water level was 55cm implying that the waters were infertile.

3.10.4 Pond cleaning.

This was done by removing excess algae from the pond to eliminate chances of cutting off oxygen supply and penetrations through the waters.



3.11 Apiculture.

This refers to the rearing and keeping of bees for different purposes such as api-tourism, research, scientific investigation, medication, pollination, monetary profits among others. An apiary is a place where bees are kept or a collection of bee hives. At RWEBZARDI, bees are particularly kept for research purposes. Bees are insects that belong to the Apidae family.

Apis mellifera means insects which produce honey.

3.11.1 Factors that influence siting of an apiary.

Distance from public places such as roads, schools, hospitals; a bee hive should be at least 200m away from such places to avoid risks of attacking people around since bees do not like noise

It should be located in a calm and quiet area free from noise.

It should be located away from by-passers.

Water source; it should be located in an area where the bees can easily access the water for regulating temperatures in the bee hive, reduce concentration of feeds for the bee brood and keep the brood moist.

Forage plants; there should be plants that contain pollen and nectar to provide food to the bees.

3.11.2 Bee Casts.

Queen bee; the only reproductive female bee in a hive. It is only one in a hive.

Drone bee; male bees in a hive. They are few in a hive.

Worker bee; all female bees but with poorly developed reproductive systems. They take care of the hive, collect nectar and pollen, clean the hive, collect water.

3.11.3 Bee species in Uganda.

Apis mellifera adansonii; characterized by dark color, small in size and hostile, they live in dry areas (Northern Uganda).

Apis mellifera scutellata; characterized by brown color, big size, calm and live in cool places.

The rest are crosses.

3.11.4 Bee forage plants.

These are plants that provide nectar and pollen for bees. They can be herbs, shrubs, trees, tree shrubs. They are classified into four that is diurnal, nocturnal, repellants and carnivorous plants.

The diurnal forages make and secrete pollen or nectar during the day making it available for bees. Different forage plants secrete nectar and pollen in different concentrations at different hours of the day. For example, *Calliandra* makes forage available at 4:00, *Ocimum* SSP morning to midday. Some plants provide forage throughout the year but in less amounts e.g., bananas, lucena, *Calliandra*, “Omusambya” whereas some seasonally but in plenty e.g. beans, maize, coffee.

Bees are still classified as stingless bees and stinging bees.

Hands on.

3.11.5 Identification of bee casts. This was done by observation where by the drone and worker bees were identified and differentiated. The drone bee was relatively bigger than the worker bees.



Identifying worker and drone bees

3.11.6 Inspection of a bee hive, this was done to check the stage of honey growth and found that honey was being formed.



Bee hive inspection

All the above activities were done on the stingless bees.

3.11.7 Bee hives. A bee hive is defined as the house for bees. And these are both traditional hives and improved hives.

3.11.7.1 The traditional hives:

These are hives that are made from locally available materials. And all these are well explained below.

The basket hive: These are woven flexible sticks in a cylindrical or truncated conical shape.

The grass hive: These are woven from dry grass in a cylindrical form.

The log hive: This is made from a tree that is felled and cut into cylindrical or truncated conical shape.

3.11.7.2 The improved hives.

1. The Langstroth hive. This type of bee hive is made up of the following: queen excluder, honey super, brood chambers, floor board, lid and Crown board



2. The Kenyan top bar hives. A top bar hive, or moveable comb hive, is a rectangle box covered with bars of a fixed width. Bees will build their combs from the centre of the top bar, hanging down. The hive has a 2 meters long hanging wire which is used to support the hive. In addition, a queen excluder is provided to create room for the brood.

3.12 Community engagement.

Community engagement is a way of building and sustaining relationships between public services and community groups enabling them both to understand and take action on the needs or issues that communities experience.

Community engagement provides detailed performance statements that everyone involved can use to achieve the highest quality results and the greatest impact. They show what good engagement looks like, and how to do it.

3.12.1 The strategies for effective community engagement.

Inclusion

Support.

Planning.

Working together.

Methods.

Communication.

Impact

3.12.2 Community Action Planning. (CAP)

This was done with the community members of Kyembogo village who were the cheerleaders of the meeting and they were left to express their feelings freely and share their opinions and ideas.

This was done through the use of the visionary approach as tool of creating.

A vision is a clear compelling mental picture of what one truly wants perceived in the present as if it is already achieved.

The community members were introduced to the concept that when you work for the happiness of your village (community), you work for the happiness of yourself and when you work for the happiness of yourself you work for the happiness of your village (community).

The theory of change which says that growth and development starts with an individual was also facilitated to the community members.

Envisioning was done where the community members were asked to close their eyes, uncrossed their legs and asked to think about the community they would love to see in 5years to come.

Each member was given chance to share what they saw as their community.

3.12.3 Structural Tension Chart. (STC)

The community members assessed the current reality of their village and envisioned the community they wanted to see in 5years time.

An STC is made up of 5 entities that is the vision, current reality, action steps, accountable and due date.

An STC of Kyembogo was drawn

VISION: Kyembogo village has enough food, educated children, homes have peace, better roads and good health by 2028.

Accountable	Action steps	Due date
Morning Zulifah	Educate parents and children about the importance of education	17/06/2028
Murangi (Chairman LC1)	Get knowledge in better and sustainable farming methods	03/04/2026
Morning Zulifah	Holding community assessment meetings and visiting each other	20/12/2024
Tukundane Bonny	Grow enough food and start projects	15/12/2024
Robert	Start saving and credit co-operatives (SACCOs)	20/11/2023

Figure 2 STC for Kyembogo village

CURRENT REALITY: Food is not enough, most children are not going to school, some parents do not have money to cater for school fees, there is violence in most homes, and roads are in a poor condition, most homes are in a poor condition, the road is on program to be constructed, schools are very far.



Community action planning

3.13 Experience, knowledge and skills gained.

Gained skills in sucker pairing

Gained knowledge in sucker planting.

Gained knowledge in sucker planting.

Attained skills in milking.

Attained knowledge in land measurement.

Acquired experience in dealing with community members.

3.14 Relevancy of theories learnt during lectures to the field work activities.

The theoretical knowledge made the practical part easy because I already had some ideas and knowledge about some subjects and matters.

3.15 Special personal contribution to the organization

Did weeding the coffee nurseries out of my will.

Planted a banana sucker.

Facilitated the visionary orientation.

Cleaned the compound through picking the nonbiodegradables that is polythene papers and plastic bottles.

3.16 Problems encountered in the field activity and how they were dealt with.

Did not get enough time to attend to all activities as they were scheduled on the time table. For instance Tea research program.

Abrupt rains while in the field, this was dealt with by always attending field work with an umbrella.

Lack of a planned schedule for the first 1.5weeks .This was solved through always asking the available scientists about the activities they had then and always joined them.

The rainy weather affected the operation of some activities. For instance, potting activity was always forced to be postponed because manure could not be mixed.

I did not get ample time to interact and engage with farmers yet they are the key stake holders in the agriculture sector.

The community members expected some allowance during the Community Action Planning meeting.

A lot of fever,flues and cough due to the environment which almost became chronicle.

CHAPTER FOUR

4.0 Introduction

This chapter entails of the recommendations and conclusion.

4.1 Recommendations.

4.1.1 To the Organization.

The institute (RWEBZARDI staff) should be considerate of the interns while making their work plans so as to suit the time table of interns such that the trainers can be readily available for the trainees (interns).

The institute should be considerate of the environment and human health and therefore reduce on the rate of the use of agrochemicals for sustainability.

More extension programs and outreaches should always be arranged and get the interns involved to create more room and time for interaction with the farmers.

4.1.2

To the University

The university should design and formulate a well-structured official academic log book including space for encoding the daily activities done, skills and knowledge gained, challenges faced, supervisor's comment and signature for efficiency and effectiveness.

The university should increase the time length given to the agriculture students for their field attachment because a lot of fields, enterprises and projects need to be attended to and given ample time to effect the learning process.

The university should always have the students engaged in practical work to increase their learning abilities and avoid over dependency on waiting for field attachments and also to keep the students always putting in practice the knowledge, skills and experience gained during the field attachment periods.

4.2 Conclusion.

The four weeks' field attachment was effectively conducted and now a success. I have gained knowledge and skills in agronomic practices, farm operations, leadership skills since I were course leader, lifestyle skills, field work skills, to mention but a few. This was really good orientation to my career and henceforth added important values to me. In the end this very field attachment program will definitely nurture my professionalism and academic excellence and the research topic was also identified. The acquired knowledge and skills will absolutely be used in the development of the Agricultural sector at the University, my home, Villages, Sub counties and District and the Country as a whole. This will therefore effect societal change and sustainable rural development.

Be blessed.

APPENDICES.

AFRICAN RURAL UNIVERSITY (ARU)

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Kagadi, Kagadi District,
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Tel: 256-793-150990/1/2



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25/9/2023

Dear Sir/Madam

RE: REQUEST TO HOST OUR STUDENT FOR FIELD ATTACHMENT FOR THE PERIOD OF ONE MONTH ON YOUR FARM/ORGANIZATION

I hereby request your farm/ organization to host our student by names of ATUHAIRWE Keviina registration number 21/ARU/BSSA/003 who is currently in year two of study. She is offering Bachelor of Science in sustainable agriculture (BSSA) of African Rural University.

The field attachment will enable our students to learn practical skills in the modern agricultural technologies, extension work, program development and farm management at different levels thus enabling ARU to graduate rural transformation specialists with the necessary knowledge and skills to meet the demands of both rural and urban farmers.

Thank you in advance for accepting my request. Together we can transform our communities from subsistence agriculture to sustainable market oriented agriculture.

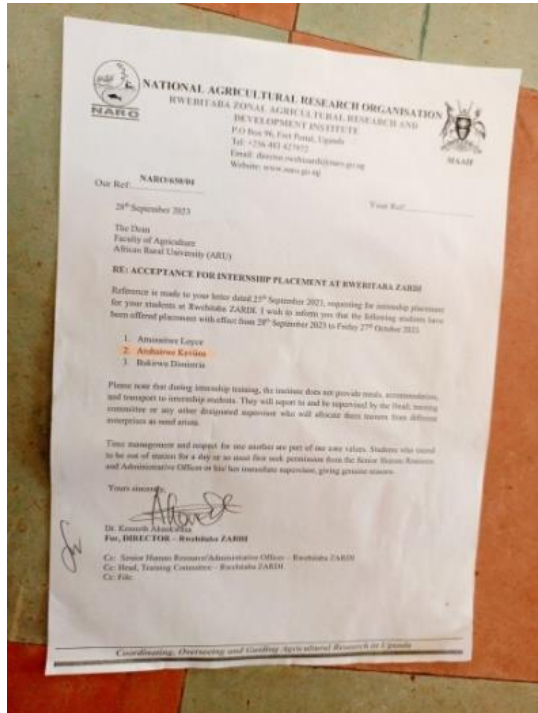
Yours faithfully,

.....

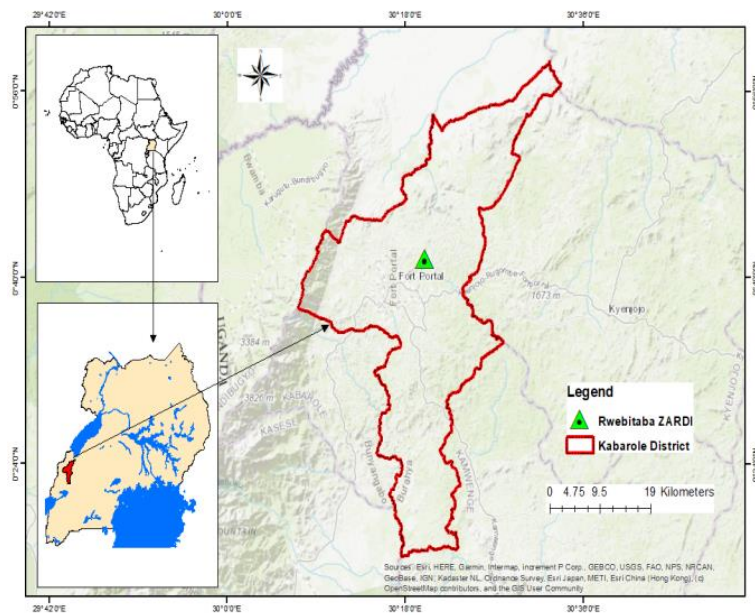
Ssengonzi Bagenda Jerome (D.Eng.)

Faculty Dean

Acceptance letter



Location of RWEBZARDI.



**NATIONAL AGRICULTURAL RESEARCH ORGANISATION
RWEBITABA ZONAL AGRICULTURAL RESEARCH AND DEVELOPMENT
INSITITUTE**

P.O.BOX 96 FORT PORTAL
Telephone (Office): 0483 427 520
Email: rwebitabadirector@gmail.com
Website: www.naro.go.og



Time Table for training Interns – September 2023

Date	Topics/courses	Resource persons
27/09/2023	Orientation	Mr. Agaba Hannington/Mr. Twesige Dominic
28/09/2023	Field lay out for pasture establishment	Mr. Gumaoshabe innocent
29/09/2023	SOya bean trial establishment	Mr. Turyahebwa Veleriano
02/10/2023	Vegetable production	Mr. Asimwe Hillary
03/10/2023	Cassava production	Ms. Asio Elizabeth
04/10/2023	Irish potato production	Ms. Aharinta Faith
05/10/2023	Vegetable production	Mr. Mutebi Douglas Jjemba
06/10/2023	Vegetable production	Mr. Mutebi Douglas Jjemba
10/10/2023	Maize production/Banana production	Mr. Mutebi Douglas Jjemba / Mr. Kazigye Francis
11/10/2023	Rice production	Mr. Ssenyonga Peter / Ms. Alituha Maureen
12/10/2023	Agroforestry	Mr. Mwesigwa Boaz
13/10/2023	Soil and water conservation	Ms. Namutebi Vivian / Mr. Mugenyi Lawrence

16/10/2023	Apiculture	Mr. Mugume Ronald
17/10/2023	Aquaculture	Mr. Mununuzi David
18/10/2023	Livestock production	Mr. Gumaoshabe innocent

Date	Topics/courses	Resource persons
19/10/2023	Report writing	Dr. Suubi Godfrey/MsNamwase Agnes
20/10/2023	Creative life orientation	Mr. Twesige Dominic
23/10/2023	Tea production	Mr. Kawooya Ronald / Mr. Mugisa Charles/ Mr. Veleriano
24/10/2023	Agric machinery	Mr. Mutebi Douglas Jjemba / Mr. WasswaKasiba
25/10/2023	Submission of the draft reports	Dr. Suubi Godfrey
26/10/2023	Review of the draft reports	Dr. Suubi Godfrey
27/10/2023	Final report submission	Mr. Mutebi Douglas Jjemba

REFERENCES

Scheufele, S. (2022, September). *vegetable/fact-sheets/potato-identifying-diseases*. Retrieved from <https://ag.umass.edu/vegetable/fact-sheets/potato-identifying-diseases>

Ministry of Agriculture Animal Industry and Fisheries.