



Faculty of Technology for Rural Transformation

A Report on Field Attachment One Conducted At Miika Estates Company Limited,

Kikonoka Village, Kitoba Sub-County,

Hoima District

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21/ARU/BSSA/001

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A Field Attachment Report Submitted to the Faculty of Technologies for Rural Transformation
in Partial Fulfillment of the Requirements for the Award of a Bachelors Degree of Science in
Sustainable Agriculture of African Rural University

July, 2025

DECLARATION

I Atulinda Beatrace declare that the information, data attached and bound in this report is out of my physical and mental effort and that has never been submitted to any institution for the award of a degree or diploma.

Signature

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Date.....

APPROVAL

This is to certify that, this one month field attachment report submitted by Atulinda Beatrace under my supervision to the Faculty of Technologies for Rural Transformation of African Rural University is ready for examination.

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DEDICATON

This work is dedicated to my fellow students of bachelor of science in sustainable agriculture both incoming, first, second and third year, my friends of bachelor of rural development and other academicians od African Rural University, my beloved family members especially my mother Ms. Mugisha Mary and lecturers for their combined effort throughout my stay at the university.

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LIST OF ACRONYMS

CAP	Community Action Planning
DRC	Democratic Republic of Congo
EM	Epicenter Manager
IMO	Inorganic Micro-Organisms
MECL	Miika Estates Company Limited
NARO	National Agricultural Research Organization
RTS	Rural Transformation Specialist
URDT	Uganda Rural Development and Training Institute
VA	Visionary Approach

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ABSTRACT

The field attachment started in June 5th 2025 and ended in July 5th 2025. It was carried out at Miika Estates Company Limited (MECL) which is located in Kikonoka Village, Kitoba Sub-County, Hoima District, on Butiaba Kaiso Tonya road, 25km outside Hoima Town, Mid-Western Uganda. During this period, the apprentice worked closely with the Farm Manager, farm worker, the Epicenter Manager and community members. The apprentice gained skills in sheep management, piggery, rabbit management, vegetable management, apiculture, fruit management especially apples and hash avocado, pastures and tree nursery bed and the key results included improved sanitation by improving waste management at the farm, establishment of sack gardens at the farm, improving human health and soil fertility by facilitating organic farming and economic empowerment by training farmers to practice modern farming methods like sustainable practices, irrigation and post-harvest handling. These practical experiences enhanced the apprentice's technical skills and understanding of integrated farm management. One notable challenge encountered was the absence of a designated manager for animal production, which affected coordination and efficiency. It is therefore recommended that MECL considers hiring an additional manager to oversee animal enterprises separately, to ensure effective supervision and productivity.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter presents the background of field attachment, purpose of field attachment, objectives of field attachment, specific objectives and the background of Miika Estates Company Limited.

1.1 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 and the third year, students who successfully complete four and six semesters are sent to the field during which they are introduced to various farms to learn practical skills in the modern technologies, extension work, program development and farm management at different levels. The learners are expected to apply the acquired knowledge in project related activities as they take part in all activities of the farm where they are attached. Outreach will acquaint learners with intrapersonal relationship with the farming communities and rural sociological principles and approaches. This is done in the fulfillment of ARUS method of learning where 60% theory and 40% is practical. The 40% was done at Miika Estates Company Limited (MECL) which is located in Kikonoka Village, Kitoba Sub-County, Hoima district along Butiaba road, 3km outside Hoima town, Mid-Western Uganda. After the entire exercise, each student shall produce an examinable report on a topic that would have been approved by her university supervisor.

1.2 Objectives of Field Attachment

1. To develop skills on the application of theory to practical work situations.
2. To test the student's aptitude for a particular career before permanent commitments are made.
3. To develop skills and techniques directly applicable to students career.
4. To enable students acquire good work habits.
5. To enable the student a systematic needs assessment of a farm and identify real life problems in the local farming communities.
6. To acquaint the learner with skills and knowledge to devise a sustainable farming technology that will be disseminated for adoption by the local farmers to address their needs.

7. To equip the student with a hands-on practical farming to appreciate and transform theory in practice.

1.2.1 Specific Objectives

1. To learn practical skills in sustainable livestock practices.
2. To learn practical skills in sustainable crop production.
3. To develop skills in community engagement.

1.3 Background of MECL

Miika Farm was established around 2019–2020 by Fred Kabagambe Kaliisa with the aim of transforming underutilized land into a productive agribusiness hub. Initially focused on eucalyptus forestry to enhance landscaping and environmental health, the farm is located in the Albertine region with a branch in Kabaale that specializes in cattle and goat farming. A key venture is the Albertine Purified Water plant, producing 2,000–3,000 cartons daily and employing around 40 local youth. In 2020, just before the COVID-19 lockdown, Miika Farm partnered with Uganda’s National Agricultural Research Organization (NARO) to launch a hybrid seed program benefiting over 120 smallholder farmers. The farm also hosts a seed sorting facility and germination lab, where women play a central role. Its diversified farming includes pigs, sheep, rabbits, bananas, and coffee, creating employment and promoting agribusiness growth. The farm’s natural features—such as waterfalls, tropical forests, and wildlife—are being developed for eco-tourism and conservation training.

1.3.1 Location of the Farm

Miika farm is located in Kikonoka Village, Kitoba Sub-County, Hoima District, on Butiaba Kaiso Tonya road, 25km outside Hoima Town, Mid-Western Uganda.

1.3.2. Vision of Miika farm

A sustainable agroforestry and real estate enterprise in the Albertine region, promoting environmental conservation and empowering small holder farmers through innovative and sustainable practices.

1.3.3. Mission of Miika Farm

To catalyze rural transformation by integrating agriculture, agro-processing, environmental stewardship, and social empowerment into a sustainable, wealth-creation model.

1.3.4. Core Activities of Miika Farm

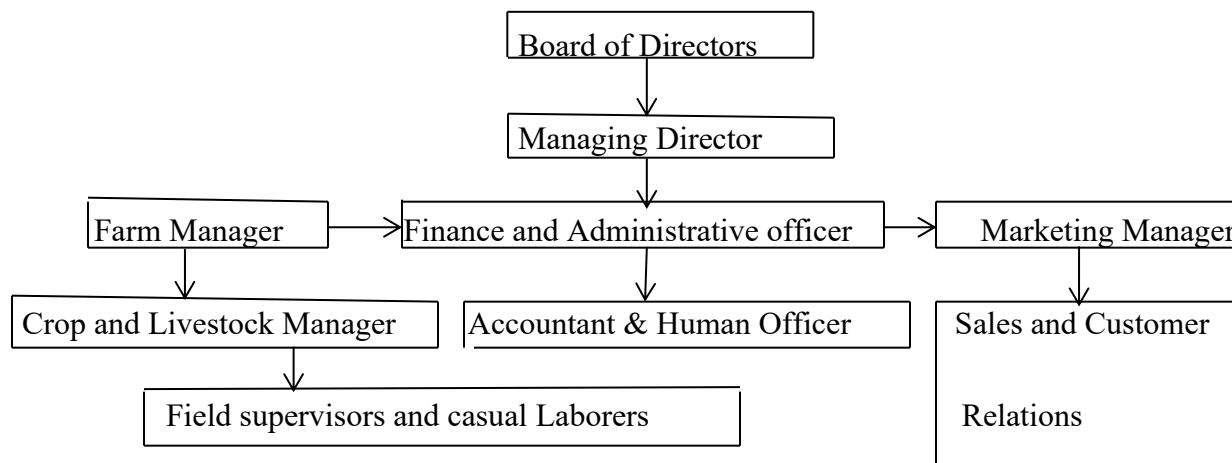
Support smallholder farmers through the distribution of hybrid seeds, enabling them to boost yields and improve livelihoods.

Operate Albertine Purified Water, a local bottling business that employs about 40 people and produces 2,000–3,000 cartons per day, promoting jobs and quality local product.

Showcase agroforestry and ecological planning, as seen with the estate’s eucalyptus plantations, waterfall conservation.

Create nature-based experiences by developing waterfall picnic areas and promoting “medicinal” rainforest settings to attract tourists and support biodiversity.

1.3.5. Organization Structure of MECL



1.4 Roles of the Host Farm

Provide hands-on training in various farming practices like planting, harvesting, irrigation, livestock care.

Mentor the student, offering guidance, sharing experiences, and teaching practical skills.

Monitor the student's performance; ensuring tasks are done safely and effectively.

Give feedback and evaluations to help the student improve and meet learning objectives.

1.5 Roles of a student

Acquire practical skills and knowledge by observing, asking questions, and participating in farm activities.

Contribute to the productivity of the farm under supervision.

Reflect on challenges and learning outcomes, providing feedback to both the host and the academic institution.

Serve as a bridge between the institution and the host farm, providing feedback that may improve future placements.

1.6 Role of University (ARU)

Provide theoretical knowledge and practical skills before the internship to ensure the student is prepared.

Coordinate with host farms to align internship objectives with academic requirements.

Evaluate the student's performance based on feedback from the host farm and submitted work.

Collect feedback from students and host farms to improve future internship programs.

CHAPTER TWO: PRESENTATION OF ACTIVITIES

2.0. Introduction

This chapter presents activities undertaken during the internship. It provides a detailed account of the tasks completed, skills developed throughout the duration. The activities listed below represent both routine responsibilities and special assignments carried out in alignment with the goals of the program.

2.1. Activities done on livestock management

The type and number of animals reared at Miika Farm is presented in table 1

Table 1. Number and type of animals at Miika Estates farm

	Animal	Number
1	Pigs	80
2	Rabbits	70
3	Sheep	150
4	Birds	50

2.1.1. Sheep Management

Miika farm has 150 sheep, the apprentice participated in a number of activities such as introducing of a new stock, grazing, collection of sheep manure, cleaning the shelter, deworming and spraying as shown below.

2.1.1.1. Cleaning and disinfecting of sheep pen

The sheep pen was cleaned to get rid of the dung and disinfected using wood ash to reduce on the ammonia accumulation, development of diseases and bad smell.



Figure 1. Cleaning and collection of sheep dung from the sheep pen

2.1.1.2. Introduction of a New Stock

This refers to the process of bringing in new animals into an existing flock. 20 sheep of doper breed from kenya where purchased to improve the genetic quality, increase production and expand the size of the herd. Before the new sheep were integrated into the main flock, several steps were followed like choosing sheep based on desirable traits such as breed, health status, age, and productivity, isolation to prevent spread of infections and diseases, spraying to prevent from ticks, vaccinated with clostridia vaccine 10% and dewormed with albenol to kill worms like tape and hook worms to ensure a healthy flock and then gradually introduce it to the environment to reduce stress and smooth interaction as shown in figure 2.



Figure 2. Deworming and spraying the new stock of sheep before introduction to the herd

2.1.1.3. Treatment of Sheep

This is a medical care given to sheep for illness or injury. During the first week of the field over 10 sheep were showing signs of sickness such as loss of appetite, weakness, abnormal discharge, diarrhea, change of wool and 1 had foot rot while 9 were suspected to be suffering from pneumonia and internal parasites.

Antibiotic; oxytetracycline was used to treat pneumonia and albendozal for deworming. Foot rot was managed by restraining the sheep, cleaning the hooves with warm water and applying iodine, ivermectin and a turpentine mixed with cooking oil around the wound so that the maggots can come out on their own and later injected with penicillin to reduce on the pain.



Figure 3. Vaccination of sheep with oxytetracycline and treating foot rot with ivermectin.

2.1.2 Piggery Production

The farm has 73 semi intensively managed pigs. The apprentice engaged in practices like castration, deworming, vaccination, cleaning the shelter and feeding.

2.1.2.1. Castration of Piglets

This is the removal of the testicles (in males). It was done to prevent reproduction and improve on meat quality. Over ten piglets were castrated using open castration that involves a surgical procedure where the testicles are removed through an incision in the scrotum. It was done by restraining the pig, cleaning and disinfecting the scrotal area with warm water, soap and methylated spirit. A longitudinal incision (lengthwise) was made on each side of the scrotum and the testicles were gently pulled out through the incision to expose the spermatic cords, blood vessels, and cremaster muscle. A surgical blade was used to cut the testicle below the point of tying to reduce bleeding. The same procedure was repeated on the second testicle after which iodine and aloe vera was applied and penicillin was injected to facilitate wound healing.



Figure 4. Castration of piglets using open cast method.

2.1.2.2. Treatment of Pigs and Piglets

Over 20 pigs were showing signs of sickness. Twelve pigs were showing signs of swollen body, starly hair, not feeding well and were suspected to be suffering from edema disease caused by *Escherichia coli* where injector oxytetracycline 10% was used. And eight piglets were having starly hair and strains on the skin, tetracycline and penicillin are used and improve ventilation and after one week pigs were fully recovered.



Figure 5. Treating edema disease with oxytetracycline and tetracycline for the skin disease.

2.1.2.3. Deworming of Pigs

Deworming is the process of killing worms like round, hook, tape worms. 3 mls of levacide worm drench are given to each of the 11 piglet which had signs of loss of appetite, body weakness, poor growth rate, rough coat, vomiting and diarrhea. After 24 hours, paralyzed worms were seen in faeces of the treated piglets.



Figure 6. Deworming with lavicide

2.1.2.4. Injecting Piglets with Iron

Piglets that are suckling need more iron for rapid and healthy growth than it is available from sows milk alone. In the case, 10 piglets of 4 days old were given 2mls of intramuscular injection of iron to quickly increase their iron levels in the body as seen in the figure 7.



Figure 7. Injecting piglets with iron

2.1.2.5. Feed Formulation

This is the process of combining various feed ingredients in the right proportions to meet the nutritional needs of pigs at different growth stages, while keeping costs low and performance high. Provide essential nutrients (energy, protein, vitamins, and minerals to support growth, reproduction, and health. Feeds are matched according to the nutrient requirements based on pig age, weight, and purpose. 100kg of maize bran, 100kg of maize grain for energy, 50kg of deventish concentrate for proteins, 0.5kg of salt for minerals and packed for vitamin deficiency.



Figure 8. Feed formulation

2.1.2.6. Feeding of Pigs and Provision of Water

A mixture of feeds containing carbohydrates, proteins, minerals, vitamins were given to pigs during morning and evening in a ratio of 45:20:15:2.5. Pigs of 30kg and above took 3kg of feeds a day, and 10kg to 29kg would take 2kg a day. Feed and water troughs would be cleaned thoroughly at the end of the day to prevent outbreak of diseases as shown in figure 9.



Figure 9. Feeding and cleaning the pig sty.

2.1.2.7. Monitoring of the Pig during Farrowing

This is the regular observation and supervision of a sow (mother pig) and her piglets before, during, and after giving birth (farrowing). This helps to ensure that the birth process goes

smoothly, and that both the sow and piglets remain healthy. It involved removal of the mucus in the mouth, nose and also help the piglets to suckle colostrum for 1-2 hours.



Figure 10. Monitoring of the pig during farrowing.

2.1.3. Rabbit Rearing

Rabbits are small mammals in the family *Leporidae*. Miika farm rears Newsland White rabbits. They are known for their long ears, strong back legs, short tails, red eyes, and soft white fur. They feed mainly on grass, leaves, and vegetables. Miika farm has 70 rabbits where 50 are females and 20 males.

2.1.3.1. Treatment of Rabbits

This is the treatment done on wounds of rabbits. Rabbits have a delicate skin since they have a soft fur, it is easy to get scratches on their skin because of overcrowding. Treatment was done on 8 rabbits where the wound is cleaned with clean warm water; iodine was placed on the skin of damaged rabbit and then left open air for iodine to dry within 2-3 days the rabbits get recovered.



Figure 11. Treating of rabbits with iodine to treat wounds

Table 2. The drugs, disease and method of application to the animal

No.	Animal	Disease	Drug name	Type of injection
1	Sheep	Pneumonia	Oxytetracycline	Intramuscular
		Tetanus	Albenol	Subcutaneous
		Foot rot	Invermectin	Topical
2	Rabbit	Wounds	Iodine	Topical (applied on the skin)
3	Pigs	Edema	Oxytetracycline	Intramuscular
		Skin disease	Tetracycline	Subcutaneous
		Iron deficiency	Iron	Intramuscular
		Deworm	Lavicide	Subcutaneous

2.1.3.2. Feeding and Cleaning of Water and Feed Troughs of Rabbits

This is the feeding of rabbits on a balanced diet of fresh greens, home-mixed grains, and commercial pellet. Feed and water troughs were cleaned and hutches daily by removing soiled bedding, rabbit dung, and disinfected weekly to maintain hygiene and prevent disease.

**Figure 12. Feeding and cleaning feed and water troughs**

2.1.3.3. Cleaning the Hatch and Its Surrounding

These were done routinely by removal of overgrown grass, debris, and eliminate hiding places for pests and predators. It was done to prevent moisture buildup and promote proper sanitation of the hatch, all of which help to maintain a safe, well-ventilated, and disease-free environment for the rabbits.



Figure 13. Cleaning the hatch

2.1.3.4. Renovation of the Hatch

It involved repairing and replacing worn-out materials such as broken wood, rusted wire mesh, while also improving ventilation, reinforcing the structure against predators like rats that eat young rabbits and ensuring the floors are raised and cleanable to maintain a safe, comfortable, and hygienic environment for the rabbits. This is done to control overcrowding and cater for over production.



Figure 14. Renovation of the hatch

2.1.4. Apiculture

2.1.4.1. Honey Harvesting

Honey harvesting is a well-coordinated activity involving the use of locally constructed top-bar hives, where cool smoke was applied to calm the bees, carefully inspected each comb to identify fully capped honey, gently cut and collect the combs without disturbing the brood, and then process the honey through crushing and straining as comb honey, all while ensuring that enough food combs are left in the hive to maintain colony strength and support sustainable, eco-friendly apiculture.



Figure 15. Harvesting of honey on top bar bee hives

2.1.5. Poultry Management

2.1.5.1. Feeding of Birds

This involves feeding birds with a well-balanced diet combining energy-rich grains like maize and wheat for carbohydrates, protein sources such as soybean meal and fishmeal for muscle growth and egg production, fresh green forage like pumpkin leaves, sukuma wiki to provide essential vitamins (A, K, C) and fiber for digestive health to support immunity and metabolism, with fresh water always available and production needs to ensure optimal health and productivity.



Figure 16. Provision of water and feeds to birds

2.1.5.2. Cleaning of the Poultry House

This is the removal of birds' droppings from the poultry house to prevent disease, promote bird health, improve productivity, and maintain biosecurity standards.



Figure 17. Cleaning of the poultry house.

2.1.6. Pasture Management

2.1.6.1 Harvesting of *Chloris Guiana*

Chloris Guiana (Rhodes grass) is a highly nutritious and drought-tolerant pasture grass commonly grown for livestock feed. It is harvested at 50–75 cm in height, preferably at the early flowering stage, to ensure high nutrient content and good regrowth. At this stage, it typically contains 8–12% crude protein, 55–65% digestibility, and about 8–10 MJ/kg of metabolizable energy. Harvesting too late reduces nutritional value due to increased fiber content. It can be used for fresh grazing, hay, or silage, and for hay production, it should be harvested during dry weather and dried properly to retain nutrients.



Figure 18. Harvesting *chloris guiana* pasture.

2.1.6.2. Weeding of Alpha Alpha (queen of forage)

This is a deep-rooted, nitrogen-fixing forage legume valued for its high nutritional content and multiple uses in livestock feeding. Weeding should be done during the early stages of growth, in the first 6–8 weeks after planting, as weeds compete with young alfalfa plants for nutrients, light, and moisture. Nutritionally, alfalfa is very rich, typically containing 18–22% crude protein, 60–70% digestibility, and high levels of calcium, vitamins A, D, E, and other minerals. It is widely used for hay, silage, pasture grazing, and even as a protein supplement in concentrate feeds for dairy cows, goats, rabbits, and poultry. Its high feed value supports milk production, weight gain, and overall animal health. More so, as a legume, alfalfa improves soil fertility by fixing nitrogen, making it beneficial in crop rotations.



Figure 19. Weeding of alpha alpha.

2.1.6.3. Baling Hay

Baling hay is the harvesting, drying, and compressing grasses. Napier grass is mostly suitable for compacting bundles for easy storage and feeding during dry seasons. To make hay bales, napier grass was cut at early flowering—when nutrient content is highest, dried the cut grass in the sun for 2–3 days, turned it regularly to prevent mold and ensure even drying. When the moisture content is around 15–20%, the hay is ready for baling. A mechanical baler was used to compress and tie the hay into bales and covered with a tarp to prevent moisture damage. They help to preserve animal feed for dry periods, reduce waste, and make transportation and storage more efficient. It retains much of the original feed’s nutritional value, including proteins, energy, and fiber, supporting livestock health and productivity year-round.



Figure 20. Baling hay

2.1.6.4. Making of Silage

Silage making with Indigenous Microorganisms (IMO) is a natural, cost-effective way to preserve green fodder like *Chloris gayana* or Napier grass. Fresh forage is chopped, mixed with molasses and IMO solution, then packed tightly into airtight containers (bags, drums, or pits). Compacting removes air to create anaerobic conditions, and the silage ferments for 21–30 days. IMO accelerates fermentation, preserves nutrients, and prevents spoilage, resulting in high-quality feed for livestock, especially valuable during dry seasons.



Figure 21. Making silage

2.2. Activities done on Crop Production

2.2.1. Apple Management

2.2.1.1. Pruning of Apples.

This involved the selective removal of branches to shape the tree, improve air circulation and sunlight penetration, reduce disease risk, remove dead or overcrowded limbs, and promote the growth of healthy fruit-bearing wood. It was done using a hand saw and a pruner.



Figure 22. Pruning apples using a pruner and hand saw.

2.2.1.2. Staking of Apples

Staking apple trees in young or dwarf varieties, provides structural support against wind and heavy fruit loads, helps the tree develop a strong and upright framework, prevents root disturbance, and ensures better overall growth and fruit production as shown in figure 24.



Figure 23. Training apples using threads

2.2.2. Fertilizer Application

2.2.2.1. Application of Yara Bela (NPK) on Coffee

To replenish soil nutrients and boost coffee growth and yield, **Yara Bela fertilizer** (15:15:15 NPK) was applied using the ring placement method. However, an incorrect application distance

of 9 cm from the plant base rather than the recommended 15–20 cm led to initial drying of the coffee plants due to root burn. Small holes around the drip line are ideal to prevent direct contact with roots and stems. Prompt daily watering for one week helped the affected plants recover.

2.2.2.2. Application of Winner (NPK) on Harsh Avocado

Winner (NPK) fertilizer was applied on avocado using ring placement method using 150ml container in a ratio of 15:15:17 where it was applied 3 feet from avocado. It is applied to boost fruiting and development of branches.



Figure 24. Application of yala bela (NPK) on coffee and winner (NPK) on avocado.

Miika farm has six acres of banana with varieties of mpologoma, kibuzi, mutuule, sukali ndiizi and mbwaziruma which were planted in the spacing of contour lines 3m by 3m and a pit of 3m length by 3m width where the hole is filled with black soil and organic matter and the sack planted after two weeks of green manuring.

2.2.2.3. Spot Weeding and Fertilizer Application on Banana

Spot weeding around banana plants using a forked hoe helps reduce weed competition while preserving soil structure and minimizing erosion. After weeding, Winner fertilizer (15:15:17 NPK) was applied 15–20 cm from the plant base in shallow holes and lightly covered with soil to boost growth and prevent nutrient loss or root burn.



Figure 25. Spot weeding and application of winner fertilizer on bananas.

2.2.3. Banana Management

2.2.3.1. De-sucking of Banana and Dis infecting of Tools

This is the removal of excess suckers in order to maintain a "mother, daughter, granddaughter" stool system. The weak, poorly positioned were removed using machete to improve fruit size and overall yield, reduce competition. It is done by cutting the unwanted suckers close to the ground, dig slightly around the sucker to get to the base and cut as deep as possible to prevent regrowth, optionally, crush the base or apply salt/ash to dry it. Repeat every 2–3 months or as suckers emerge, keep one strong daughter and one granddaughter sucker per plant after disinfect tools with jik between plants to stop disease.



Figure 26. De suckling bananas using a machete and disinfecting farm tools

2.2.3.2. Mulching of Bananas

Mulching in banana cultivation involves covering the soil around the plant base with organic materials like dried grass, banana leaves, crop residues, or compost. This practice helps conserve moisture, suppress weeds, and enhance soil fertility. Mulch was applied in a circular ring, approximately 60 cm from the stem, to prevent rot and deter pests such as banana weevils. Regular replenishment was carried out as the mulch decomposed, making it a sustainable practice for maintaining healthy and productive banana plantations.



Figure 27. Mulching bananas

2.2.3.3. Staking of Banana

Staking involves supporting the banana plant, especially when it starts bearing fruit, by tying it to strong wood with a Y shape load where it's inserted firmly into the ground that prevents the plant from toppling over due to the weight of the fruit bunch or strong winds, thus protecting the developing bananas and maintaining plant stability. It was placed at an angle and tied to the pseudo stem with soft material to avoid damaging the banana.



Figure 28. Staking of bananas

2.2.3.4. Pruning of Bananas. This involves the careful removal of dry or dead leaves, old leaf sheaths, and excess suckers (young shoots); Dead leaves were pruned in a curve shape to prevent water gathering on a banana that causes rotting which reduces pest and disease buildup, and direct the plant's energy toward fruit development. Proper pruning also helps to maintain the desired “mother-daughter-granddaughter” planting system by limiting the number of active stems per mat.



Figure 29. Pruning of bananas

2.2.3.5. Digging of Trenches in Banana Plantation

Digging trenches in a banana plantation is a vital water management practice designed to facilitate proper drainage and prevent waterlogging, which can severely affect banana growth and root health. Shallow channels between rows of banana plants were created to direct excess from Nyakabingo waterfalls that flow in the banana plantation. Trenches helped to reduce soil

erosion, minimize nutrient leaching, and maintain optimal soil moisture levels by allowing controlled water infiltration.



Figure 30. Digging of trenches

2.2.4. Management of Beans

2.2.4.1. Spot Weeding of Beans

NARO Bean 2 is an improved climbing bean variety developed by Uganda's National Agricultural Research Organization (NARO), valued for its high yield, resistance to diseases like anthracnose and angular leaf spot. During cultivation, selective hand-weeding around each plant rather than clearing the entire plot was practiced. This method preserves soil structure, reduces erosion, and minimizes crop damage. Weeding was done at early growth stages when the beans were most vulnerable to competition for nutrients, light, and moisture.



Figure 31. Spot weeding NARO bean 2

2.2.5. Vegetable Growing

The farm has vegetables like egg plants, lettuce, cucumber, nakatti, green pepper play a crucial role in human nutrition and overall well-being. They are rich in vitamins (such as A, C, and K), minerals like potassium and magnesium, antioxidants, and dietary fiber, which help support immune function, reduce the risk of chronic diseases (like heart disease, diabetes, and cancer), and promote healthy digestion.

2.2.5.1. Weeding of Lettuce

This is the removal of the unwanted plants in the garden. It was essential because the crop had shallow roots and slow growth rate at first, making it highly vulnerable to competition from fast-growing weeds. Lettuce is rich in vitamins (such as A, C, and K) where a hand hoe was used to destroy the hiding places for pests, reduce competition for light, space and nutrients to improve lettuce health, yield and harvest quality; where weeds like wondering Jew was controlled by burying in a pit of 4-5m and after one week after weeding lettuce was ready for harvesting.



Figure 32. Weeding lettuce and controlling wondering jew by burying.

2.2.5.2. Weeding of Egg plants in a Nursery Bed

This was delicate but important step to ensure healthy seedling development. Eggplant seedlings were small and had shallow roots, so weeds can easily outcompete them for water, light, and nutrients. Weeding helped to keep the bed clean, reduce disease risks, and encourage strong, vigorous growth. Hands were used to gently remove weeds without disturbing the fragile eggplant roots which was done after watering, when weeds were easier to pull.



Figure 33. Weeding eggplant seedlings

2.2.5.3. Introduction of Sack Gardens to the Farm

Sack gardening is a simple, space-saving method of growing vegetables in vertical sacks filled with a soil mixture of topsoil, compost, and sand. These gardens involve cutting holes in the sides of large sacks and planting crops like spinach, sukumawiki (kale), cucumber, both on top and along the sides. Stones were added to improve drainage and water distribution.



Figure 34. Making sack gardens at the farm

2.2.5.4. Drip Irrigation

Drip irrigation on sack gardens is an efficient and sustainable method of watering crops grown in delivers water directly to the roots of plants in a slow, controlled manner. This was done in a target of re-using the bottles from Miika Albertine factory that is around the farm. It ensured consistent moisture levels, which is vital for healthy plant growth in the confined soil of a sack. Drip irrigation also reduces labor, and allows for precise water control making it ideal for vegetables like spinach, lettuce and tomatoes grown in sacks, drip systems in sack gardens can be highly productive and easy to maintain, especially for small-scale farmers.



Figure 35. Applying drip irrigation on sack gardens

2.2.5.5. Identification of Pests on Sukuma wiki and Spraying with a Pesticide

Pests were identified on sukuma wiki leaves using naked eyes to visibly view the type damage. One was moth caterpillar (Diamondback moth) which had created small holes in the leaves, especially on the lower side, and leaves behind green droppings and others were aphids which appear as small, soft-bodied insects (us clustered on the underside of leaves, sucking plant sap and causing leaves to curl and yellow. To control these pests, spraying with the appropriate solution of insecticide like dimethoate was used during late evening and then withholding period of 2 weeks before harvesting. Regular inspection helped catchments early and prevents serious damage.



Figure 36. Identification of pests on sukuma wiki and spraying with dimethoate to control aphids and moth caterpillar

2.2.6. Postharvest Handling Practices

2.2.6.1. Seed Sorting

Miika Albertine Seed Factory, the commercial arm of NARO, processed 300 kg of beans through manual sorting. This involved visually inspecting and handpicking beans to remove damaged, discolored, immature, broken, or pest-infested ones. Sorting by size, color, and shape enhances quality, market value, and planting performance. For seed use, it ensures only the healthiest, most viable beans are selected, promoting better germination and crop development.



Figure 37. Sorting NARO bean 2

2.2.6.2. Seed Dressing of Nabe 16 maize

This is the process of treating seeds with chemical substances, usually fungicides and insecticides, before planting to protect them from soil-borne diseases and early insect pests. This was done to prevent issues like seed rot and damping-off caused by fungi, and deters pests such as wireworms and seed corn maggots that can damage seeds before or during germination. Royal cap of 250mls, red dye 500ml for identification and actellic 50ml for pesticides in a ratio of 1:8:4 were used and later packed in kilogram, sealed, branded for selling.



Figure 38. Seed dressing, packing and sealing of Nabe 16 maize

2.2.6.3. Measuring the Moisture Content in Beans Using a Moisture Meter

Moisture testing is essential for ensuring safe storage and preventing spoilage. A moisture meter is a handheld device that quickly and accurately measures the moisture content in beans. To use it, select the appropriate bean variety setting such as NARO Bean 1 or NARO Bean 2 place a sample in the measuring chamber, roll to break the beans, and initiate the test. The device uses capacitance technology to detect moisture and displays the result on a digital screen.

Beans should be stored at a moisture content of 12–13% to prevent mold growth, rotting, and insect infestation. Moisture meters offer a fast, reliable method to assess seed dryness before storage or sale, ensuring quality and longevity.



Figure 39. Measuring the moisture content in NARO bean 2

2.2.6.4. Calculating of the Plant Density

Plant density refers to the number of plants growing in a specific area, typically expressed per square meter, hectare, or acre. Working with the seed farm manager, the seed rate for one acre was calculated using a spacing of 50 cm by 20 cm, with two beans planted per hole. The spacing was converted to meters, and with one acre equal to 4,046 m², the number of planting spots was determined, resulting in approximately 40,460 seeds. Given that one bean weighs 0.4 grams (0.0004 kg), the total seed weight required was calculated to be 16 kg. Since two beans are planted per hole, the total seed rate needed was 32 kg per acre. Proper plant density is crucial as it influences competition for sunlight, water, and nutrients, directly impacting crop yield.



Figure 40. Calculating the plant density

2.2.6.5. Calculating the Net Weight of Beans

Moisture content testing helps determine the level of moisture in seeds, with the recommended standard being 13%. The formula used is:

Moisture Content Adjustment = Gross Weight $\times$ (100 - Actual MC) / (100 - Recommended MC).

Using this formula, the moisture content of NARO beans from Mr. Johnson's farm was evaluated. With an actual moisture content of 15%, the net weight of his 500 kg batch was adjusted to 485 kg, indicating a reduction due to improper seed drying.



Figure 41. Calculating the net weight of beans after measuring the moisture content in the beans.

2.2.7. Tree Nursery Management

2.2.7.1. Watering of Pine Trees

This was a practice to ensure healthy seedling development and strong root formation. It was done during early stages; require consistent and adequate moisture to support germination and vigorous growth. It was done gently to avoid disturbing the soil and uprooting the delicate seedlings. Watering was done early in the morning and late in the afternoon to reduce evaporation and prevent scorching of young plants. A watering can was used to ensure even and

controlled application. Regular monitoring of soil moisture is necessary to adjust watering schedules and keep the pine seedlings healthy until they are ready for transplanting.



Figure 42. Watering pine seedlings

2.2.7.2. Making Pots

Pots were made from polythene bags (black polythene bag) due to their low cost and ease of handling. These bags are made in different sizes depending on the plant species and growth duration. A 10cm stick was used to roll the bag and then cut vertically following the margin of the stick in order to produce many bags at once. The bags were perforated at the bottom to allow proper drainage and prevent waterlogging, which could lead to root rot.



Figure 43. Making of pot bags

2.2.7.3. Potting

Potting is the process of filling pots with soil mixture and transplanting seedlings into them. The soil mixture, often called potting media, should be well-drained, fertile, and light. A common mix includes topsoil, sand, and organic matter, usually in a ratio like 2:1:1. The mixture is thoroughly blended to ensure even distribution of nutrients and good aeration.



Figure 44. Potting

2.2.7.4 . Cutting and Planting Flowers

Flowers were cut using a pruner in a slanting way for proper germination, placed in a container with water to prevent drying and then treated by placing the slanting end in ash to prevent pests and diseases then a small hole is made in the center of the pot, the seedling is gently placed inside upside down to facilitate easy germination, cover the hole and the soil lightly pressed to support the seedling. After potting, the seedlings were watered immediately and kept under shade. Regular care, including watering, weeding, and checking for pests and diseases until the seedlings were ready for transplanting into the field within 2 weeks.



Figure 45. Cutting and planting flowers

2.2.7.5. Measuring and Leveling the area to Establish a Nursery Bed

To measure and prepare the area for a nursery bed, first decide on the bed size, 1 meter wide and 3 to 10 meters long using a measuring tape, pegs, and stick to mark the boundaries. After marking, stones, and debris were removed and the soil was leveled using a hoe. Proper leveling prevents waterlogging, promotes uniform seed germination, and makes nursery management tasks like watering and weeding easier.



Figure 46. Leveling a nursery area

2.2.7.6. Pricking out of Pine Seedlings.

It was a delicate but important process done to give each seedling enough space to grow healthy roots and stems. When multiple pine seedlings are growing together in a single container, they compete for nutrients, water, and light, which can lead to stunted. This was avoided by transferring individually into separate pots once they develop 2–3 true leaves or are about 5–10 cm tall. It was done after watering the seedlings and fingers used to gently loosen the soil around each seedling and carefully lifted out then use a stick to create a hole in the new pot with a well mixture of soil, gently placed, covered with soil then watered immediately and placed in shade.



Figure 47. Pricking out pines and transplanting them

2.2.8. Waste Management

2.2.8.1. Collection and Sorting of Waste. Waste management is the process of collecting, transporting, processing, recycling, or disposing of waste materials in a safe, efficient, and environmentally responsible way. Different types of waste were collected such as household garbage, bottles, polythene where garbage was put in a pit to rot, bottles used in making drip irrigation and polythene used for making sack gardens.



Figure 48. Collecting and sorting waste

2.2.9. Environmental Conservation

2.2.9.1. Identification of Tree Species

Different tree species were identified such as eucalyptus and *Theodora eucalyptus* for timber, poles, fire wood, construction, medicine where *Theodora eucalyptus* was used to treat and prevent pressure, diabetes, prepared in rice and tea and identified natural tree species such as white nongo and stink wood which help in purification of water and food for wild life like chimpanzee.



Figure 49. Tree species identification

2.2.9.2. Biodiversity Conservation

Miika Farm hosts the Nyakabingo Waterfalls, an ecological hotspot that supports diverse plant and animal life. The clean water, forest cover, and unique microclimate help sustain endangered species and provide vital resources for local communities. Conserving this area ensures water purification, erosion control, and climate regulation. Nyakabingo also offers potential for eco-tourism and environmental education, adding economic and cultural value while promoting sustainable resource use.



Figure 50. Cleaning at Nyakabingo water falls

2.3. Community Engagement

2.3.1. Orientation on how to Conduct CAP by the Epicenter Manager

During my field attachment, I was honored to receive a visit from the Epicenter Manager of Hoima District, Miss Namubiru Grace. She provided a comprehensive orientation on how to conduct the Community Action Planning (CAP) process and explained the use of the scroll as a facilitation tool. Additionally, she led a session on the visionary approach to community development and introduced me to the Local Council 1 (LC1) Chairman. Together, we visited several farmers in the area, including Wanaichi Farm and Mr. Ssentalo's tree nursery bed, gaining valuable insights into local agricultural practices.



Figure 51. Orientation by the Epicenter Manager and Visitation at Wanaichi Farm

2.3.2. Conducting CAP

Community members in Kikonoka Village, Kitoba Sub-county, were engaged in a facilitated session focused on collaboratively developing a village vision using the visionary approach. During this process, alongside the Extension Mentor, Miss Namubiru Grace, a research topic was identified: **“Assessing Different Eco-Friendly Management Practices to Control Fall Armyworm in Maize Fields in Kikonoka Village.”**



Figure 52. Community Engagement when Conducting CAP

2.2.3. Introduction of visionary approach at the farm

The intern introduced visionary approach at the farm together with the farm manager Miss. Esther Banage where at the end of the day we were able to draw the vision on the farm we want by Dec, 2027.



Figure 53. Introduction of visionary approach at the farm

CHAPTER THREE: ANALYSIS AND EVALUATION

3.0. Evaluation of the Host Farm

Miika farm appears to have a well-structured operational model focused on crop, livestock, and trees. Its strength is consistence production cycles and use of labor.

It has challenges that arise from manual systems like out dated machinery that limit efficiency like in the seeds factory and have no protective gears for the workers in seeds factory. Also it has no permanent manager for vegetables and animal production.

It experiences operational risks such as climate variability which is addressed by irrigation from Nyakabingo water falls.

Financially, its performance depends on its ability to manage in puts, maintain cash flow and generate profit from its output.

Miika has a strong potential for growth through improved efficiency, sustainable practices and market expansion with investment in technology, better resource management and value added production that maintain its resilience.

3.1 Knowledge and Skills Gained

Time and good communication skills through interacting with workers.

Planning and management of weekly activities.

Managing myself in vegetable growing and animal production.

3.2 Challenges Encountered in the Field

Mindset change is a challenge where people don't want to change to organic farming.

People could not turn up for the meeting since it was a harvesting season of beans.

Having no specified manager of vegetables, sheep, rabbit and piggery where information was got from internet and workers.

CHAPTER FOUR: CONCLUSION AND RECOMMENDATION

4.1 Conclusion

In conclusion, the field attachment at Miika Farm provided a valuable and enriching hands-on learning experience that deepened my understanding of integrated agribusiness operations. Through active participation in activities such as seed sorting, potting, transplanting, piggery management, water bottling, and eco-tourism operations, I gained practical skills that complemented my theoretical knowledge.

The farm's commitment to sustainability, innovation, and community development was evident in its diverse projects ranging from hybrid seed production to eco-hospitality and environmental conservation around Miika Nyakabingo Waterfalls.

The attachment also enhanced my appreciation for the role of agribusiness in rural transformation and job creation. Overall, this experience not only strengthened my technical and interpersonal skills but also inspired a greater sense of responsibility toward sustainable agriculture and rural development.

I would like to express my gratitude to Miika Estates Company Limited and my supervisor Mr. Byamukama Mwanika and the farm manager for the guidance and support during this field attachment.

4.2. Recommendation

4.2.1. To MECL

I recommend that MECL should employ the farm managers concerning with vegetables, and animal production.

4.2.2. To ARU Management

The university should add more time for field attachment so as students can cover much.

The university should provide log books to students before going to the field.

CHAPTER FIVE: REFERENCES

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CHAPTER SIX: APPENDICES

6.1 List of people who visited the farm

NAMES	ADDRESS	CONTACT
Mwisakubi Sedrack	Hoima	0772988617
Kyosaba Catherine	Hoima	0777445731
Nalumago Sylvia	Hoima	0772576148
Joyce Nansamba	Hoima	0777099243
Kykutegeka Muhame	Hoima	0766385222
Kabatalya Joyce	Hoima	0772694135
Mbabazi Jackson	Hoima	0777372698
Atuhuura Job	Hoima	0772249937
Doreen Wandera	Hoima	0776367888
Isabye Sedrack	Hoima	0785164051
Odongo Stanly	Hoima	0772384679

6.2. List of people who attended when conducting CAP

	Names	Address	Contact
1	Irumba Robert	Kikonoka	0773483649
2	Twinomugisa Rogers	Kokonoka	
3	Irumba Francis	Kikonoka	0786946588
4	Kabaluli Daisy	Kikonoka	0782821734
5	Kyaligonza Margret	Kikonoka	0775007208
6	Kabatabazi Janet	Kikonoka	
7	Ayesiga Moses	Kikonoka	0777118924
8	Babiiha Robert	Kikonoka	0779245061
9	Kabasiita Sarah	Kikonoka	0789904011
10	Katusabe Chrispesi	Kikonoka	0777227913

6.3 A table showing a work plan when at MECL

A ONE MONTH STRUCTURAL TENSION CHART

VISION: Broaden my understanding in all farm activities using sustainable agricultural practices by 15th July, 2025.

ACCOUNTABLE	ACTION STEPS	DUE DATE
Apprentice	Writing and presenting a report	15th July, 2025
Apprentice and community members	Conducting CAP to identify a research topic	25 June, 2025
Apprentice and farm workers	Working in the sheep shelter and pastures	20 th June, 2025
Apprentice and farm workers	Working in vegetables and fruit gardens	12 th June, 2025
Apprentice and farm workers	Working on piggery unit and rabbits	7 th June, 2025
Apprentice and farm manager	Orientation on different projects around the farm	6 th June, 2025
Apprentice, field supervisor and farm manager	Arrival and introduction to the farm	5 th June, 2025

Current reality

Farm manager and coworkers available.

Have knowledge on visionary approach.

Some projects available at the farm.

Have materials to use during cap.

Have a mentor and supervisor.

6.4. A map showing the Location of MECL



It shows the location of Miika farm

6.5. A Recommendation from Miika Farm

