



KWARA STATE POLYTECHNIC, ILORIN

**INSTITUTE OF TECHNOLOGY
AGRICULTURAL AND BIO-ENVIRONMENTAL ENGINEERING
DEPARTMENT**

**A TECHNICAL REPORT ON
STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME
(SIWES)**

BY

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**HELD AT
MAXWELL AGRO CHEMICAL COMPANY
MURITALA, ALONG POST OFFICE ROAD, ILORIN, KWARA STATE**

**BEING A REPORT SUBMITTED TO THE SIWES UNIT,
INSTITUTE OF TECHNOLOGY CHAPTER, KWARA STATE
POLYTECHNIC, ILORIN**

**IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR
THE STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME
(SIWES)**

NOVEMBER, 2024

DEDICATION

This report is dedicated to God Almighty, my family, whose support was unwavering, and to the resilience within me, which has propelled me to successfully complete this Student industrial work experience through my own determination, hard work, and perseverance.

ABSTRACT

This report is based on Student Industrial Work Experience Scheme (SIWES) held at MAXWELL AGRO CHEMICAL COMPANY, Muritala, Along, Post-Office road, Ilorin, Kwara State, it gives brief explanation about the SIWES program vis-à-vis its history, objectives and aims, while also provides a brief description, roles and functions of MAXWELL AGRO CHEMICAL COMPANY, Muritala, Along, Post-Office road, Ilorin, Kwara State, It further focuses more on the technical exposure and experience gained from the engineering Department of the Company to be specific. It finally gives an account of the equipments used, types and their function respectively as well as some of the problems and challenges faced and provide recommendations that can further improve the program.

ACKNOWLEDGEMENT

I would like to thank the Almighty God, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. he has been source of my strength, commitment and patience to pass various obstacles throughout this program also, my profound gratitude goes to the Kwara State Polytechnic Management for including the Student Industrial Workshop Experience Scheme (SIWES) to the National Diploma Programme which enable me to learn and gain more experience outside the campus.

Also, I will like to say a big thank you to the management of *MAXWELL AGRO CHEMICAL COMPANY, Muritala, Along, Post-Office road, Ilorin, Kwara State*, for giving me the opportunity to be trained under an organization of high status.

I would not end this acknowledgment without appreciating my parents for their unwavering support, co-operation, encouragement and understanding throughout the duration of the SIWES programme.

DECLARATION

I hereby declare that, I from Agricultural and Bio-Environment Engineering Technology Department, Institute of Technology, Kwara State Polytechnic, Ilorin. underwent the four months students industrial work experience scheme (SIWES) at *MAXWELL AGRO CHEMICAL COMPANY, Muritala, Along, Post-Office road, Ilorin, Kwara State*, from 5th August to 30th November, 2024.

I also declare that to the best of my knowledge, all sources of knowledge used have been duly acknowledged.

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CHAPTER ONE

1.1 INTRODUCTION TO SIWES

Students Industrial works experience scheme (SIWES) skill acquisition programme was introduced by the Federal Government of Nigeria to expose undergraduate in Engineering, Technology and Sciences of Tertiary Institutions (University, Polytechnics, Mono-technics and Colleges of Education) to industrial environment so as to acquire basic skills existing in their respective disciplines to smoothen their entry into industrial practices on completion of their studies and also reduce periods spent in training fresh graduates as new employees. It was first initiated and funded by industrial training fund (ITF) during the formative years 1973/1974.

The scheme forms part of the approved Minimum Academic Standards (MAS) in the various Degree programmes for all Nigeria universities. It is an effort to bridge the gap existing between theory and practice of engineering and technology, science, agriculture, medical, management and other professional educational programmes in the Nigeria Tertiary Institution. The programme mediate exposing students to design and construction of machines and equipment, professional work method and ways of safe-guarding the work area and workers in industries and organizations.

1.1 Historical Background of SIWES

The Students Industrial Work Experience Scheme (SIWES) is a skill acquisition initiative introduced by the Federal Government of Nigeria with the primary objective of bridging the gap between theoretical education and practical industrial experience for students in higher institutions. The scheme is designed to equip students in Engineering, Technology, Sciences, Agriculture, Medicine, Management, and other fields with hands-on experience that complements their classroom learning. The program applies to students in universities, polytechnics, monotechnics, and colleges of education across Nigeria.

SIWES was first introduced during the 1973/1974 academic session and was initially funded by the Industrial Training Fund (ITF). At the time, there was a growing concern that graduates lacked the necessary practical skills and industrial exposure to seamlessly integrate into the workforce. Many industries had to spend extended periods retraining newly employed graduates to equip them with practical skills. The scheme was created to address this deficiency by exposing students to real-world industrial environments during their academic programs, thereby reducing the time and cost involved in training them after graduation.

The scheme has since become an integral part of the Minimum Academic Standards (MAS) as established by the National Universities Commission (NUC), the National Board for Technical Education (NBTE), and the National Commission for Colleges of Education (NCCE). SIWES plays a crucial role in ensuring that students, particularly in technical and vocational fields, experience the practical side of their studies before graduation.

1.2 Aims and Objectives of SIWES

SIWES is a strategic initiative designed primarily to facilitate the acquisition of relevant skills by students in their respective fields of study. By immersing students in real-life work environments, the program enhances their employability and prepares them for the challenges they will face upon graduation. Below are the specific objectives of SIWES:

Provide Industrial Placement: SIWES offers placement opportunities in industries for students enrolled in higher institutions. These placements are approved by the relevant regulatory authorities, such as the National Universities Commission (NUC), the National Board for Technical Education (NBTE), and the National Commission for Colleges of Education (NCCE). The aim is to allow students to acquire hands-on work experience and technical skills relevant to their academic programs.

Prepare Students for the Real Work Environment: The program helps prepare students for the realities of the workplace by allowing them to experience first-hand the dynamics of the work environment. This exposure gives them a clearer understanding of professional expectations and challenges, fostering a smoother transition from school to the workforce.

Enhance Future Employment Opportunities: By offering students exposure to potential employers and work environments, SIWES also serves as a networking opportunity. Students may establish contacts with industry professionals and companies, potentially enhancing their prospects for future employment.

1.3 Importance of SIWES

Since its inception, SIWES has played a critical role in shaping the quality of education and workforce readiness in Nigeria, particularly in the fields of science, engineering, and technology.

Below are some of the key contributions of the SIWES program:

1. **Improvement in Science and Technology Education:** The program has significantly enhanced the practical aspect of science and technology education in Nigeria. By providing students with hands-on experience, it complements theoretical learning and produces graduates who are better equipped to apply their knowledge in practical situations.
2. **Increased Employment Opportunities:** Graduates who have participated in SIWES are more employable due to their exposure to real-world work environments. Employers tend to prefer candidates who possess not only academic qualifications but also practical experience, which SIWES provides.
3. **Better Standard of Living:** The program indirectly contributes to an improved standard of living by producing skilled graduates who are more likely to secure well-paying jobs

in the industrial and technological sectors. This contributes to national development by creating a pool of highly skilled professionals.

4. **Production of Skilled Graduates:** SIWES ensures that students graduate with not only theoretical knowledge but also the practical skills necessary to thrive in their respective fields.

CHAPTER TWO:

2.0 DESCRIPTION OF THE ORGANIZATION

Maxwell Agro Chemical Company, Muritala, Along, Post-Office road, Ilorin, Kwara State specializes in selling, formulating, and applying agrochemicals such as herbicides, pesticides, and fertilizers. The company serves farmers, agribusinesses, and research institutions by providing quality products and services.

2.1 SERVICES OFFERED

- Sales of Agrochemicals: Includes herbicides, pesticides, fungicides, and fertilizers.
- Mixing and Formulation: Ensuring proper chemical ratios for effectiveness.
- Spraying and Application Services: Assisting farmers with chemical application on farms.
- Consultation: Providing farmers with expert advice on chemical use.

2.2 ORGANIZATIONAL STRUCTURE (MODIFY IF NEEDED)

1. General Manager (GM) – Oversees all operations.
2. Sales and Marketing Department – Handles product sales and promotions.
3. Procurement and Inventory – Manages stock and purchasing.
4. Mixing and Formulation Unit – Prepares chemical formulations.
5. Application and Field Services – Conducts spraying and demonstrations.
6. Health, Safety, and Environmental (HSE) Unit – Ensures chemical safety.
7. Finance and Administration – Manages financial records and logistics.

CHAPTER THREE

3.0 ACTIVITIES CARRIED OUT

During my SIWES training at *Maxwell Agro Chemical Company, Muritala, Along, Post-Office road, Ilorin, Kwara State*. I was actively involved in various activities related to the sales, mixing, and application of agrochemicals. The following are some of the key activities I participated in:

3.1.1 SALES OF AGROCHEMICALS

One of my primary tasks was assisting in the sales department, where I interacted with customers and provided information on various agrochemical products. I learned about different types of chemicals used for pest and weed control, as well as their applications.



AGROCHEMICALS

Common Agrochemicals Sold:

- Herbicides (Weed Killers)
- Glyphosate (e.g., Roundup, Touchdown) – Non-selective herbicide for weed control.
- Paraquat (e.g., Gramoxone) – Fast-acting, non-selective contact herbicide.
- Atrazine – Selective herbicide used in maize and sugarcane farms.

3.1.2. PESTICIDES (INSECT CONTROL)

- Cypermethrin (e.g., Best, Super Killer) – Used to control insects in crops.
- Chlorpyrifos – Effective against termites and soil pests.
- Lambda-cyhalothrin (e.g., Karate) – Broad-spectrum insecticide for crops.

3.1.3. FUNGICIDES (DISEASE CONTROL)

- Mancozeb (e.g., Dithane M-45) – Used for fungal disease prevention.
- Carbendazim – Effective for controlling fungal infections in crops.

3.1.4. FERTILIZERS (SOIL NUTRIENTS)

- NPK (e.g., 15-15-15, 20-10-10) – Balanced fertilizers for plant growth.
- Urea – A nitrogen-based fertilizer that boosts crop yields.

3.1.5. PLANT GROWTH REGULATORS

- Ethrel (Ethephon) – Used to induce fruit ripening.
- Gibberellic Acid – Stimulates plant growth and seed germination.

3.2 MIXING AND FORMULATION OF AGROCHEMICALS

At the formulation unit, I learned how to mix agrochemicals correctly to achieve the desired effects while ensuring safety. The process involved:

- Measuring the correct chemical ratios based on recommended dilution rates.

Mixing herbicides, pesticides, and fungicides according to manufacturer guidelines.

- Ensuring proper handling and storage to prevent contamination and hazardous reactions.



3.3 SAFE HANDLING AND STORAGE OF CHEMICALS

Handling agrochemicals requires strict adherence to safety procedures to prevent health risks and environmental hazards. I was trained on:

- Proper labeling of chemical containers.

- Storage guidelines, such as keeping chemicals in a well-ventilated and cool environment.
- Spillage control measures, including immediate cleanup and safe disposal of residues.



LABELED AGROCHEMICALS CONTAINERS

3.4 SPRAYING AND APPLICATION SERVICES

A key part of my training involved applying agrochemicals on farms. This required knowledge of:

- Using different types of sprayers, such as knapsack, motorized sprayers and electric sprayer.
- Adjusting spray nozzles for even distribution of chemicals.

- Applying chemicals under proper weather conditions to avoid drift and wastage.



3.5 SAFETY MEASURES FOLLOWED

- Since agrochemicals can be hazardous, I followed strict safety procedures, including:
- Wearing Personal Protective Equipment (PPE) such as gloves, masks, boots, and coveralls.

- Avoiding direct contact with chemicals by using proper mixing tools.
- Washing hands and equipment thoroughly after handling chemicals.



PROTECTIVE EQUIPMENT

CHAPTER FOUR

EXPERIENCE GAINED

4.1 TECHNICAL SKILLS ACQUIRED

During my training, I gained practical knowledge in:

- Identifying and recommending the right agrochemicals for specific problems.
- Mixing herbicides, pesticides, and fungicides correctly.
- Operating spraying equipment safely and efficiently.
- Handling and storing chemicals according to safety guidelines.

4.2 BUSINESS AND CUSTOMER SERVICE EXPERIENCE

Beyond technical skills, I also learned about:

- Sales techniques, including explaining agrochemical benefits to customers.
- Customer service skills, such as advising farmers on proper chemical application.
- Stock management, including keeping records of sold and stored products.

4.3 CHALLENGES FACED

Some customers had little knowledge of proper chemical use, requiring extra time for explanations.

- Exposure to strong chemical fumes made handling some substances difficult.
- Weather conditions sometimes disrupted scheduled spraying operations.

4.4 SOLUTIONS TO CHALLENGES

- I provided detailed usage instructions to customers, ensuring they understood proper application techniques.
- I wore protective equipment (PPE) to reduce exposure to chemical fumes.
- I monitored weather conditions to determine the best times for spraying activities.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.0 SUMMARY

In summary, the student industrial work experience scheme (SIWES) has been carried out and it can be categorically said that objectives of the scheme has been achieved. It has exposed me to the four major units of a standard institutional Agricultural and Bio-environmental Engineering work experience (Farm Power and Machinery, Irrigation and Drainage, crop processing and farm storage structure).

The safety rules and regulations, operational guideline of some basic equipment in the workshop house were also exposed. In general, practical exposures to base engineering practicals have been learnt.

5.1 CONCLUSION

My SIWES experience at *Maxwell Agro Chemical Company, Muritala, Along, Post-Office road, Ilorin, Kwara State* was highly beneficial. I gained practical knowledge in agrochemical sales, mixing, and application. I also learned about business operations and safety procedures in the agricultural sector.