



## Investigating Occupational Farm Safety Hazards Mitigating Mechanized Operations for Paddy Rice Production in Ibaji

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### Abstract

*Farm work related injuries resulting from poor implementation, practicing and monitoring of health and safety policy (HSP) on mechanized agricultural farms had overtime impeded the productive efficiency of concerned workers. These among other factors, affect farmers' agricultural productivity negatively. It was in accordance to these perspectives that occupational farm safety hazards (OFSH) mitigating mechanized paddy rice production by farmers in Ibaji agro communities was studied. 120 respondent-paddy rice farmers were chosen at random, questionnaires on OFSH and physical interview were adopted for data collation purpose. The research revealed the male gender populated farmers of about 62%. Poor occupational safety culture was recorded only for agrochemical handling operations. This was characterized by low hazard awareness – 12.7%, safety training - 16.7%, literacy levels - 23%, use of personal protective equipment (PPE) - 13.7%, low OFSH policies implementation and monitoring of about 19% and 24% respectively. These consequently resulted have about 90% of OFSH accident incidences recorded annually among the farmers. 85% of these incidences were attributed agrochemical attack resulting to burns, while 67% were of chronic obstructive pulmonary diseases (COPD). Farm machinery and equipment (FM&E) operations recorded high safety culture compliance measures as shown in figure 2; resulting to only 19% of accident incidences. These incidences occurrences stemmed from OFSH were observed as deterrent factors mitigating paddy rice farmers' adoption of mechanized techniques in their farming operations*

**Keywords:** Farmers, Occupational, Safety, hazards, Paddy rice, Production

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### Introduction

Numerous issues pose a threat to the Nigerian green revolution implementation towards paddy rice sustainable production (Ngigi, 2024). The immediate impacts of these issues on the sustenance of paddy rice security are worsened with high occupational farm safety hazards (OFSH) mitigating mechanized productivity. Among the Nigerian paddy rice farmers, over 5,000 OFSH accident incidences of casualties occurs annually resulting to two to three days' absenteeism from farm workplace

(Olowogbon, et al., 2023). Paddy rice production encompasses farming operations ranging from nursery, transplanting and direct seedbed planting, crop protection practices, harvesting and post harvesting operations (ILO-OSH, 2010). These operations employ a huge labour force that have recorded worst OFSH casualties (McKnight and Melvin 2010).

According to Muilerman, (2013), increasing OFSH accident incidences and death occurrences in agriculture operations among emerging nations is

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worrisome. Next to the construction sector, the agro production sector has high work fatalities incidences for ill-health and accident injuries for occupational health and safety (OHS). These casualties were stemmed from integrated mechanized operations endangering farmers' safety owing to high exposure risk equaling to or surpassing those of the mining and construction industries. Frequent utilization of agrochemicals against plant pest, disease and soil nourishment and the use of machines are two significant 21<sup>st</sup> century developments that has influenced OFSH risk affiliated to paddy rice farming activities in the view of increasing productivity outputs (McKnight and Melvin 2010).

Farmers' exposure to these OFSH risk has overtime resulted to casualties ranging from musculoskeletal disorders from poor ergonomically designed farm machinery and faulty ones where designs were initially right. More so, dusts emanating from farm machinery operations effects had given rise to diseases like byssinosis, asthma, pneumonitis and non-specific chronic obstructive pulmonary diseases (COPD). These occurrences has placed serious OFSH concerns on paddy rice farming operations with respect to its food security (Chris, 2008). OFSH accident incidences reduces productivity, hinders farmers' efficiency and lowers farm production output. Increased farm productivity and efficiency can be achieved through efficient health and safety policy (HSP) implementation.

This has been connected to favourable performance metrics (Smallman and John, 2001). For the Nigerian paddy rice production sector to meet its food safety goals through productivity, farm work safety (FWS) is consequently a key concern. As paddy rice farming technology advances, there is an increasing health risk from farmers who use hazardous and unsophisticated methods and have little or no

understanding of agricultural FWS thereby, putting millions of farmers at risk of injuries sufferings and most likely dying (Mostafa, 2023).

Paddy rice farming operations in Ibaji is moderately mechanized using variety of agricultural machines and equipment extensively both indoors and outdoors in a range of climates. Farming operations could be dangerous due to unsafe and reactive attitudes regarding accidents occurrences and associated injuries. The main causes of illness and accidents among these farmers are: operating heavy machinery and its requisite equipment; being exposed too high levels of noises and vibrations; slipping and tripping; heavy weight lifting and other tasks that can lead to musculoskeletal conditions; contact with dusts, agrochemical, organic materials and pathogenic agent; and; being exposed to high temperatures and bad weather around the farm vicinity.

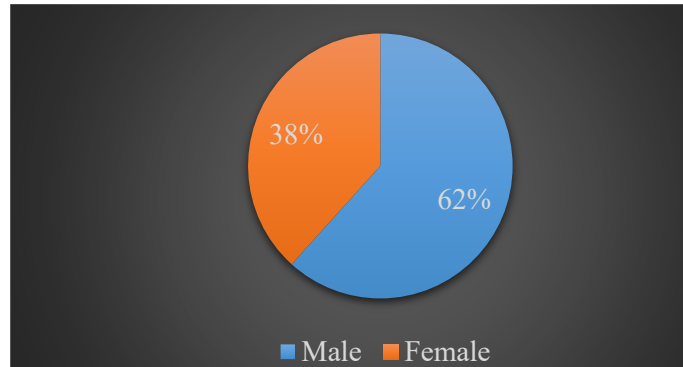
This research findings is aimed at investigating hazards mitigating mechanization operations among paddy rice farmers within Ibaji agro-community.

## **Methodology**

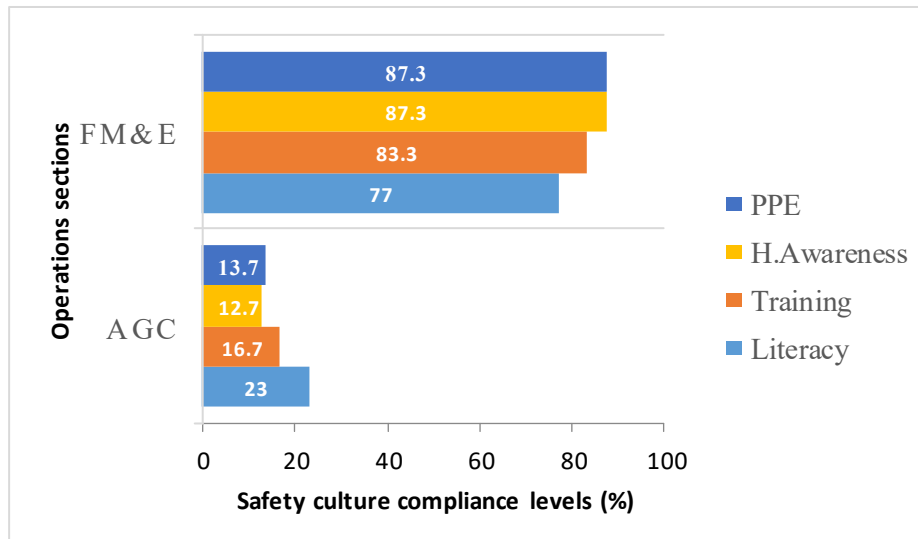
Ibaji is an agrarian local government area with an approximated 1,377 km<sup>2</sup> landmass in the southern region of Kogi state at 6°52'N 6°48'E geographically; bordered with Anambra and Edo states respectively with an estimated population of about 128,129 (<http://www.en.wikipedia.org/wiki/ibaji>; 2026).

Farmers' demography, interviews, structured questionnaire on OFSH were utilized for primary data collation purposes; while, related online research publications and studies were adopted as secondary data collation source. For data analysis, basic statistics like mean, mode and Likert scaling were employed.

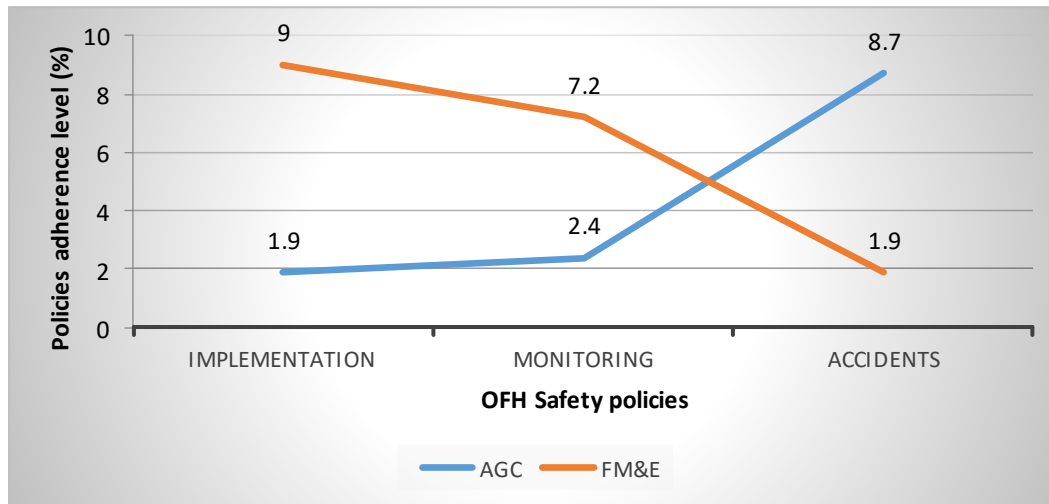
## Results



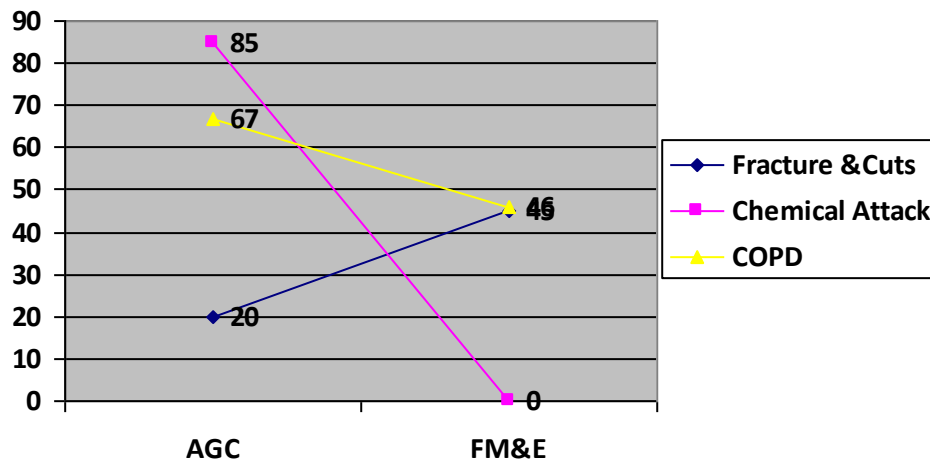
*Figure 1 Paddy rice farmers Demography*



*Figure 2. Farm work safety culture*



*Figure 3. OFSH safety policies*



*Figure 4 Occupational Farm Hazard Accidents*

## Discussions

FM&E and AGC represented farm machines and equipment and agro-chemical sections respectively.

Figure 1 revealed 62 % and 38 % respondent farmers population under this research study were male and female respectively. It is a male gender dominant

farming population with ages ranging from 25 to 55 years respectively.

According to figure 2, safety culture compliance level recorded for agrochemical operations such as the use of personal protective equipment (PPE), agro-chemical hazards awareness, safety training and farmers literacy on farm work safety culture were: 13.7%, 12.7%, 16.7% and 23% respectively. Farmers

under this research survey had basic formal education with no professional safety training on handling and application of agrochemicals even though they had good instinct of severe dangers these agrochemicals exhibits. These resultant effects of these poor safety culture factors were high accident incidences of about 85% agrochemical attack and 67% related to chronic obstructive pulmonary diseases (COPD) recorded according to figure 4. Also, according to figure 3, agrochemical OFSH safety policy implementation and monitoring levels were rated very low at 19% and 24% respectively resulting in about 97% of overall accident incidences recorded during operation.

According to Muilerman (2013), due to the agriculture industry's pervasive underreporting of fatalities, injuries, and occupational illnesses, official data may not accurately reflect the true state of OFSH concerns for paddy rice farmers.

According to figure 2, high safety culture compliance level was recorded; 87.3% for PPE utilization during FM&E operations, fracture, 87.3% of farmers had cuts and laceration hazards awareness, 83% had safety trainings on the use of applicable farm machinery and equipment, and 77% of farmers were literates on safe FM&E operations and their relevant applications. Farmers under this survey had good literacy level on the operations and the use of PPE for various FM&E that were utilized for their farming operations. More so, they had adequate OFSH awareness, professional technical and operational procedural trainings for these FM&E.

According to figure 3, OFSH safety policy implementation and monitoring levels were rated high at 90% and 72% respectively. According to figure 4, only 45% accident incidences were recorded for bone fracture from impact, cuts and lacerations from sharp cutting edges among operators of these FM&E; while only 46% of COPD accident incidences were recorded owing to dusts and carbon mono-oxide fumes from operated FM&E. The overall

accident incidents recorded was 19% compared to agrochemical operations according to figure 3.

Paddy rice farmers are involved in around half of the over 300,000 OFSH related casualties that occur globally each year from agrochemical and FM&E (ILO, 2011).

## Conclusion and Recommendations

It is impossible to overstate how crucial paddy rice farmers' health and safety are crucial to the Nigeria rice productive output and its contribution to national food security. Since paddy rice's mechanized productivity output is dependent on human capital well-being, investing in OHS trainings, implementation and monitoring as a proactive measure to mitigate OFSH for agrochemical operations becomes of necessity gains than being reactive to it unhealthy and unsafe casualties.

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