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Safety in Agricultural Extension and Development in Cross River State

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Abstract

This paper examined safety in agricultural extension and development in Cross River State, Nigeria. It reviewed literature on unsafe behavior in agricultural extension and development, assess unsafe environment in agricultural extension and development, examine the common hazards in agriculture, review the importance of safety in agricultural development and assess safety constraints in agricultural extension and development. The paper observed that; improper clothing, emergency preparedness, field operations, and livestock handling were some of the aspects where farmer's activities needed more safety attention in the study area. Also the paper noted that certain activities and conditions influence safety in agricultural extension and development in Cross River State such as; poor handling of animals, Confined Spaces, Heights, Machinery, Noise Pollution, Vehicles, Water, and Weather. Common hazards reviewed were dangers originating from agricultural machinery such as tractor, implement or tools, hazardous chemicals, toxic or allergenic agents, carcinogenic substances, transmissible animal diseases, ergonomic hazards, and extreme temperatures while safety constraints in agricultural extension included macro-contextual factors and institutional contextual factors. The study recommended that the level of hazards emanating from agricultural operations be determined and evaluated, while also ensuring the implementation of zero hazardous practices in the Nigerian agriculture. The study conclude that safety is crucial for agricultural development, as accident and hazards are the products of negligence and avoidance of the extra effort or cost of carrying out farm activities.

Keywords:
Safety, Agricultural Extension, Extension and Development, Development

1. Introduction

Agricultural extension in Cross River State unlike any other state in Nigeria is bedeviled with a myriad of safety and developmental challenges due to the poor administration of the Federal Ministry of Agricultural in Nigeria. This is not because the administrators are inefficient but because of divers challenging arising from the federal government's inability to develop the Nigerian agricultural sector, and the poor management of the national economy which has affected the social life of extension agents, the mode of operation of extension services, the rate of mobilization of materials for extension programmes, farmer's investment levels, training programmes for extension personnels, the level of application of personal safety and security consciousness, social development and agricultural development and the level of infrastructure among farm households mostly in the rural areas of Cross River State.

According to Agbarevo (2013), the blame on poor adoption of agricultural innovation on farmers due to dwindling productivity as a result of their being conservative is not sufficient to expound the poor level of agricultural development in Cross River State. The effectiveness of the agricultural extension system in conducting its activities can be used to assess the success of extension programmes.The federal government's proposed programme on RUGA was grossly rejected which sought to support herders rather than farmers who were being killed, displaced and insecure. Thou Cross River State was not included in the programme, it has however witnessed consistent communal

wars between communities over agrarian land dispute which has led to the destruction of lives,properties and farm communities. Extension services can not be sustained in an atmosphere devoid of peace. This has also put the lives of farmers and the extension agents in danger. When a proper teaching/learning condition is provided, it result is a relatively permanent and positive change in behavior of the farmer which will improve agricultural development. Such teaching/learning situations according to Agbarevo (2013), are effective indicators for agricultural development. But most times the teacher himself is disposed to an unfavourable condition devoid of personal safety,occupational safety, financial security and inadequate training.

Agricultural Safety has become paramount in all farm operations and occupation service delivery in order to improve the efficiency of the farmer and extension agent while also preserving the knowledge and human resources of the subject matter specialist. The Cross River State agricultural development has experienced a minimum attention given to agricultural safety issues except for large commercial farms such as the Wilmar Palm plantation / Calaro Estate and Biase Plantations Limited (BPL)/Ibiae Estate.

According to Segun (2011), the term farm safety seems like what only farmers who lives and work on industrialized farms should know about, but the truth is that everyone stand to benefit from learning about farm safety, even people who are merely visiting farms or those who keep backyard gardens. Segun (2011) further opined that farming is a common form of employment, providing jobs for lots of people all over the country. However, farm machinery, animals, chemicals, and storage areas can pose a serious risk to people who lack knowledge to protect themselves. According to the Canadian Centre for Occupational Health and Safety (CCOHS) (2021), safety is the sum of good working equipment, capable and attentive operators. This definition does not exclude the environmental condition of the farm, the activities performed in the farm and the farm personnel that perform the activities. Agriculture as a multi-faceted sector, involves several activities which comes with varying degrees of risks, accident, hazards, injury, and so on, from exposures to dangerous environment and performing hazardous activities. Most times, the activities do not contain any hazard, but the farm condition and operations may become a factor that impedes safety for agricultural stakeholders. Conditions such as wet floor, sprayed fields which may release harmful gases such as Benzene which causes Leukemia, disease area with mycobacterium tuberculosis, equipment malfunctioning, sharp edges, faulty electric system, Hard rock mining sites which causes Silicosis, noise from engines, welding process which releases metal fumes to the air and causes fever, psychological stress such as bullying, anxiety, fear or depression, among other.

The Canadian Centre for Occupational Health and Safety (CCOHS) (2021) also classified hazards based on the following category: Biological (bacteria, viruses, insects, plants, birds, animals, and humans, etc.), Chemical (which consist of the physical, chemical and toxic properties of the chemical), Ergonomic (repetitive movements, improper set up of workstation, etc.), Physical (such as radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise, etc.) and Psychosocial - stress, violence, and so on. The Safe Line One Worker Agency, (Safetyline, 2021) had highlighted the various hazards that can affect a farmer, an extension agent, and farm operators under sub-headings such as; Safety hazards, Biological Hazard, Physical hazard, Chemical hazard, Work organization hazards and Ergonomic Hazard. Safety hazards are unsafe working conditions that can cause injury, illness, and death. Safety hazards are the most common workplace risks. They include; anything that can cause spills or trips such as cords running across the floor or ice, cause falls such as working from heights, including ladders, scaffolds, roofs, or any elevated work area, unguarded and moving machinery parts that a worker can accidentally touch, electrical hazards like frayed cords, missing ground pins and improper wiring, and confined spaces. Biological hazards, commonly known as bio-hazards, can be any biological substance that could cause harm to humans. Biological hazards include exposure to harm or disease from working with animals, people, or infectious plant materials. Workplaces with these kinds of safety hazards include, but are not limited to, work in schools, day care facilities, colleges and universities, hospitals, laboratories, emergency response, nursing homes, or various outdoor occupations. Biological hazards are those hazards prone to farmers, and the extension agent or the farm community, Blood and other body fluids, Fungi/mold, Bacteria and viruses, Plants, Insect bites, and Animal and bird droppings. Physical hazards affect workers in extreme weather conditions or harmful working environments. Workers who are exposed outside in the sun for a prolonged period of time can suffer physical hazards which can cause long term effects to their health. Physical hazards can be any factors within the environment that can harm the body without necessarily touching it. Physical hazards include: Radiation (including ionizing and non-ionizing materials such as microwaves, radio waves, etc.), High exposure to sunlight/ultraviolet rays, Temperature extremes (very hot and cold), and Constant loud noise. Ergonomic hazards occur when the type of work, body positions, and working conditions put a strain on the body. It is often the hardest to spot since it is noticed afterward. Short-term exposure may result in “sore muscles” while extended exposure can result in serious long-term issues (Safetyline, 2021). Ergonomic Hazards include: Improperly adjusted workstations and chairs, frequent lifting, Poor posture, awkward movements, especially if they are repetitive, having to use too much force, especially if you have to do it frequently, and excessive vibration. Chemical hazards are present

when some farmers, extension agents or farm families are exposed to any chemical preparation in the workplace in any form (solid, liquid or gas). Some are safer than others, but to some farm workers who are more sensitive to chemicals, even common solutions can cause illness, skin irritation, or breathing problems. Safetyline (2021) also presented chemical hazards in the following examples: Liquids like cleaning products, paints, acids, solvents – particularly if chemicals are in an unlabeled container, Vapors and fumes that come from welding or exposure to solvents, Gases like acetylene, propane, carbon monoxide, helium, H_2S gas, Flammable materials like gasoline, solvents, and explosive chemicals, and Pesticides. According to Safetyline (2021), Work Organization Hazards are safety hazards or stressors that cause stress (short-term effects) and strain (long-term effects). These are hazards associated with workplace issues such as workload demands, workplace violence, high intensity and/or pace, lack of control or respect, flexibility, poor social support or relations, and sexual harassment.

On the effect of agro-chemicals on the health of farmers in Cross River State, Effiong and Aboh (2019) opined that farmers in Cross River State, Nigeria are engaged in mixed farming with the use of chemicals. According to their report, majority of the farmers who positively perceived the use of agro-chemicals in Cross River State were males and were more exposed to chemical health hazards. They also opined that though application of fertilizer and pesticides increases yield, corresponding health challenges namely; head ache, fever, dermatitis and allergy among others were also requisites. That excessive use of chemical fertilizers in developing countries like Nigeria often receive less attention than the use of pesticides. In another study, Effiong and Effiong (2015) reported that excessive use of certain agro-chemicals has been associated with contamination of ground water with nitrate rendering it unfit for human and livestock consumption by immobilizing some of the hemoglobin in the red blood cells hence reducing the ability to transport oxygen and also causing a problem in the aquatic ecosystem called Eutrophication (a process whereby green algae develops and grow on the surface of streams, rivers and lakes due to run-off of agricultural fertilizers into them, thus diminishing oxygen content to the detriment of other organisms). In a relative study, Etim et al., (2021), on the assessment of the level of occupational safety awareness for agricultural extension agents in Cross River State, reported on the unsafe activities in extension profession such as; engaging in horse play such as teasing, throwing materials/tools, practical joke etc, failure to apply caution in animal handling, contact with droppings and tools, failure to use the dip vat appropriately in an animal farm, negligence of farm safety instructions, farm entry rules or farm instructor's guidance and use of tools without appropriate servicing, washing, cleaning, lubricating and storage. Others include unsafe clothing, taking short cuts and by-passing safety devices in the farm and during farm demonstrations. Unsafe conditions such as: unavailable statistical data management on extension safety and health during field operation, delayed payment, poor office outfit and under reporting of extension agent's safety and health constraints in the field. Etim et al., (2021) also indicated the common hazard in extension occupation such as fear and tension from attacks and aggressive behaviour of farm community members, and inadequate information on farm entry and orientation, injuries from animals such as bites, stings, piercing and sucking, poor road network to demonstration farms and long hours under the Sun which causes sunburn, heat stroke, dehydration and hypothermia. According to their report, these hazards are known to cause fatigue, injury, discomfort, allergic reactions due to scratching of itching skin after contact with plants, insects, among others. Etim et al., (2021) also identified safety challenges in the level of occupational safety awareness in Cross River State agricultural system which include; unavailability of field and demonstration allowances, Self-born provision of personal protective equipment (PPE), Lack of insurance cover for extension agents, self-born provision of logistics and personal safety in a new community of assignment, poor logistic support from the government, unavailability of hazard allowance for common hazards faced by extension agents, among others.

1. 1. Statement of the Problem

Several authors have determined the level of safety in agricultural development. Segun (2011), had implied a low level of industrial agriculture which made agricultural safety awareness unattractive to farmers which is peculiar to Cross River State and Nigeria. According to him, the term farm safety seems like what only farmers who lives and work on industrialized farms should know about. The Better Health Channel (2018), posited that the most dangerous workplaces are farms. Lu et al., (2006) as cited by Saina, Odimu and Otara (2017) had emphasized that farm workers are exposed to agro-chemicals in a variety of ways. Workers who perform hand labor tasks in treated areas risk exposure from direct spray, aerial drift, or contact with agro-chemical residues on the crop or soil. Etim (2019) had also decried the low level of awareness of agricultural professionals on the use of agricultural information resources which can improve the development of the extension system and agent. Workers who mix, load, or apply agro-chemicals can be exposed to agro-chemicals due to spills, splashes, and defective, missing or inadequate protective equipment. Essentially dangerous technology is being promoted in a setting without technical and human resources to control it properly (Saina et al., 2017). Effiong and Aboh (2019) had studied the effect of agricultural chemicals on the health of farmers in Cross River State, while Etim et al., (2021) assessed the level of occupational safety awareness

among agricultural extension agents in cross river State. No study has been done on safety in agricultural extension and development in Cross River State as a whole, in Nigeria. This is the research gap this study intend to fill by reviewing literature on Safety in agricultural extension and development in Cross River State, Nigeria, and to offer recommendations based on the report of this study.

1.2. Objectives

The specific objectives of the study were to;

1. Review on unsafe behavior affecting Agricultural Extension and Development in Cross River State
2. Review unsafe environmental condition affecting Agricultural Extension and Development
3. Review the common hazards in Agriculture affecting agricultural development in Cross River State
4. Review the importance of safety in agricultural development
5. Assess safety constraints in Agricultural Extension and Development

2. Literature review

2.1 Unsafe behavior

Certain practices by extension staff will endangers both their lives and the farm families if they are performed outside the guiding principles of safety awareness. To enhance development, the extension agent must ensure best practices in his profession that are tied to safety. Better Life Channel (2012), posited that the most dangerous workplaces are farms, and further recommended ways of making the farm a safer workplace which include: Regularly walk around your farm and assess potential dangers, Making sure everyone working on the farm is properly educated on farm risks and trained in first aid, Keep all equipment in good repair, Store dangerous items such as machinery, firearms and chemicals behind locked doors and remove keys to a safe place, Find ways to improve safety, such as fitting roll-over protection (ROPS) and seat belts to tractors, or replacing dangerous chemicals with less toxic varieties, Keep a log of injuries and near-misses to pinpoint areas for improvement, Consult with other workers and family members on how to improve safety, Write a safety plan together that includes ways to identify hazards and minimize potential risks, Always use appropriate safety equipment, such as machinery guards and shields, helmets, gloves, goggles or breathing apparatus, and Making sure everyone understands and uses safety procedures.

An ounce of prevention is worth a pound of cure (Glenn, 2017). According to Glenn (2017) most farm injuries and fatalities are preventable when one adhere to safe operating practices. Disposable factors were identified such as;

- ***Improper Clothing***: Among the Cross River State extension agents in the Ministry of Agriculture and the CR-ADP, there is no enforcement on appropriate farm attire since agents do not get involved in the farm operations themselves. However, Loose clothing is a common cause of injury in agriculture. Most agricultural equipment has gears, pulleys and sharp edges that can easily catch clothing. As a precaution, wear tight fitting clothing; keep cuffs buttoned and shirts tucked in; don't wear a tie while working and remove any loose jewelry. Keep long hair under a cap or head covering to prevent it from getting tangled in equipment. Wearing a broad-brimmed hat is also recommended to reduce sun exposure, a leading cause of skin cancer to farmers.
- ***Emergency Preparedness***: All farm workers should be trained in life-saving techniques, including first aid and Cardiopulmonary Resuscitation (CPR). In rural areas where medical help may be several minutes away, the first person on the scene may need to initiate life-saving aid before emergency rescue personnel arrive. Making sure everyone knows where to make emergency phone calls and that emergency numbers are located on a laminated sheet next to the phone.
- ***Field Operations***: On field operations, Glenn (2017) posited that injuries that would not be considered life threatening near the shop can turn fatal in the field. Injuries that occur when the operator is in a field, alone, can leave the worker stranded for hours. As a precaution, always alert someone with a two-way radio or cell phone when you dismount a tractor or other piece of equipment. Control vegetation that can hide hazards (e.g. ditches, holes, rocks) and remove hazards when possible. When not possible, make sure hazards are clearly marked.
- ***Livestock Handling (Cattle):*** Livestock are very dangerous if they are not respected Glenn (2017).

a. Cattle Senses: Cattle have a wide angle of vision (almost 360 degrees) and are easily frightened by shadows, unfamiliar objects and loud noises. Cattle will move around to see what is in their blind spot and are more easily agitated when something remains there. Sound is also important to cattle. They are sensitive to loud and high pitched noises.

b. Herding: Cattle are herding animals and will be much easier to move when they are in contact with other cattle. They tend to follow the leader, so if you can get one to move in the desired direction, the others will follow.

c. Flight Zone: Another behavioral concept that is important is the "flight zone." Livestock will react in a variety of ways according to a handler's activities relative to their flight zone. For example, livestock will face a handler and maintain a safe distance when the handler is outside their flight zone. In contrast, livestock will turn away from a

handler who enters their flight zone. Individual animals will have flight zones of varying sizes based on their fright level. Working from the edge of the flight zone will generally help keep livestock calm and manageable.

d. Corrals and Chutes: Sudden changes in a chute or corral, either visual or auditory, can frighten an animal. Remove noise makers such as loose chains or hanging pieces of metal. Also to be removed are visual distractions and dark areas in the chute. Even a small piece of paper that may seem innocuous to us may be a large distraction and frighten livestock. Examine corral and chute layouts to reduce animal stress. A less stressful animal is less dangerous.

- ***Livestock Handling Precautions:*** According to Glenn (2017), some general precautions when handling livestock include: being alert. It is impossible to fully know or predict animals' actions. Always be aware of what is happening around you. This is particularly important when handling livestock at sunrise and sunset when livestock are most active. Despite their range of vision, cattle have poor depth perception and are unable to see behind them. To reduce risk, always announce yourself when approaching an animal. Leave yourself an exit path. Never enter small enclosed areas with livestock. If unavoidable, always be sure you have a fast and easy escape route. Avoid quick movements and loud noises. Livestock can startle and frighten easily. Move slowly and deliberately around livestock. Be careful not to create excess noise. Be patient. When working with livestock in a crowding pen, chute or squeeze, prodding an animal when it has no place to go is dangerous. Animals can react quickly and violently. Always consider mature males and nursing females dangerous. Be aware of animals that are sick, injured or otherwise frightened. Train new workers and handlers before allowing them to work with livestock.

2.2. Unsafe Environmental Condition

Unsafe environmental conditions in Cross River State stem strongly from the lapses at the federal level. Negligence and low level of regard for Nigerian farmers by the government exposes farmers to an unsafe occupational environment. A situation where attention is not given to the farmer's personal health, farm activity, literacy, welfare, social lifestyle, changes in his environment that constitute a potential threat or hazard to their farm operation among others and that of the extension professionals is overwhelming. On how the agricultural sector is covered by national safety and health legislation, the International Labour Organization (2000) reviewed that there is a wide diversity of approaches in national legislation in the world, but only a small number of States have developed a comprehensive set of standards applicable to agriculture. In most cases such as is applicable in Nigeria, general labour laws do not give any specific reference in full to the agricultural sector. National legislation in Nigeria is grouped under Safety and health laws and regulations which do not exclude agriculture; and with no safety and health regulations, standards and codes of practice which specify safety and health measures concerning: mobile machinery for agriculture and forestry, pesticides and other agro-chemicals, notable occupational diseases in agriculture, the prevention of accidents in silos and other confined spaces, personal protective equipment, special protective measures for the use of explosives, occupational medical services in agriculture, welfare, housing and other facilities.

Compensation schemes for occupational injuries, hazards, accidents and diseases are provided on a single national insurance scheme controlled by the Federal Ministry of Labour and Productivity, in collaboration with the Federal Ministry of Health which applies to all federal workers with no specific reference to the agricultural sector. This means that only extension agents and office staff in the ministry of Agriculture can benefit from the scheme as federal civil servants. But this scheme has not been appropriately implemented in a way that gives access to extension workers, down to the local level.

According to estimates from Decker et al., (2021), agriculture is one of the most hazardous sectors of activity, both in industrialized and developing countries. Some 170,000 agricultural workers are killed each year. This means that workers in agriculture run at least twice the risk of dying on the job as compared with workers in other sectors. This is also evident based on the current extension to farmer's ratio by the government of President Mohammadu Buhari who through his N-Power programme recruited school leavers in N-Agro scheme. This keeps the current ratio at 1:5000 and 1:10,000 with a total workforce of 7000 public extension agents (Kristin, Davis and Tunji, 2019). This scenario or condition leaves a lot of pressure and safety concerns on the extension agents. Agricultural mortality rates have remained consistently high in the last decade as compared with other sectors, where fatal accident rates have decreased. Millions of agricultural workers are seriously injured in workplace accidents with agricultural machinery or poisoned by pesticides and other agrochemicals. Furthermore, due to the widespread under-reporting of deaths, injuries and occupational diseases in agriculture, the real picture of the occupational health and safety of farm workers is likely to be worse than what official statistics indicate. Safety Conditions vary greatly from one country to another, in most countries only some categories of agricultural workers are covered by national legislation, employment injury benefits or insurance schemes. A large number of agricultural workers are thus deprived of any form of social protection. When national regulations exist, they are often sporadically applied. Effective enforcement is poor due to

insufficient labour inspection, lack of understanding and training on hazards and their prevention of both of employers and workers and low levels of organization among agricultural workers (ILO, 2000).

Investment on occupational safety and health also provides higher labour productivity and healthier labour relations. The adoption of adequate labour legislation and social protection measures are major steps in that direction. In order to achieve sustainable agricultural growth, the productivity of the workforce should be raised. This can be achieved by providing agricultural workers and their families with the means to meet their basic needs, with access to adequate working and living conditions, as well as protecting their health and welfare, and promoting the protection of the environment in which they work and live.

According to the Better Life Channel (2012), every farm is different, but hazards common to most farms include:

Animals – this include injuries inflicted by animals such as bites, kicks, crushing, ramming, trampling, and transmission of certain infectious diseases such as Giardia, salmonella, ringworm and leptospirosis (Decker, *et al*., 2021)

Chemicals – this include pesticides and herbicides that cause injuries such as burns, respiratory illness or poisoning.

Confined Spaces – such as silos, water tanks, milk vats and manure pits may contain unsafe atmospheres, which can cause poisoning or suffocation

Electricity – dangers include faulty switches, cords, machinery or overhead power lines (Etim, et al., 2021)

Heights – falls from ladders, rooftops, silos and windmills are a major cause of injury

Machinery – hazards include tractors without roll-over protection structures (ROPS), power take-off (PTO) shafts, chainsaws, augers, motorbikes and machinery with unguarded moving parts

Noise Pollution – noise from livestock, machinery and guns can impair hearing since they play a major role in agriculture (Etim, et al., 2021).

Vehicles – crashes or falls from motorbikes, two-wheel and quad bikes, tractors, and horses can result in major injuries

Water – drowning can occur in as little as five centimetres of water. Dams, lakes, ponds, rivers, channels, tanks, drums and creeks are all hazards. Young children are particularly at risk

Weather – hazards include sunburn, heat stroke, dehydration and hypothermia. Better Life Channel (2012).

2.3. Extension hazards

Extension planners in Cross River State and extension agents faces difficulties to respond to the technological, information and security/safety needs of their occupation to meet growing demand for rural and agricultural development since they are the active force in any agricultural policy. According to Decker et al., (2021), and Etim, et al., (2021), many diseases and health impairments arise from poor sanitation, inadequate housing, malnutrition and a wide variety of parasitic and bacterial infections affecting the entire rural population where the extension agents performs his field work.

Government propaganda, abandoned projects, lack of commitment by government in it development programmes, and lack of or inadequate inputs, credit, subsidy, market intervention, among others can destroy the trust, confidence and respect farmers have on the extension system and extension agents who have gone through diverse roles to arouse the interest of the farmers to the innovation, programme or project (Etim et al., 2021).

The extension agents is saddled with great responsibilities for community development through their empowerment role, community development and organization role, human resource development role, problem solving and educational role (Shankariah and Shingi, 1997; Etim et al., 2021), these roles have their accompanying risks and safety requirement for project actualization at various levels which may be lacking or co-existing with poor budgetary allocations, inadequate funding, poor logistic support, delayed salaries and inconsistent allowances, denied benefits, among others which culminate into a high level of insecurity among extension agents, and downgrading of their professional occupation for lack of respect for the job they perform for agricultural development. This has also limit expenditure, mobility, safety, information flow between farmer and the extension system due to reduced contacts, among others. The capacity to move people, inputs, and produce, and to send and receive information influences extension activities and capacity (Peterson, 1996). Vehicular movement may not be easily accessible due to poor level of infrastructure and mobility, and consequently contact with farmers is constrained while dissemination of improved technology, inputs, and extension personnel becomes impeded and risky.

The media and new media tools/devices have become a more veritable tool for a perfect flow of information, innovation, awareness, safety, security tips, among others. The acquisition of such devices are mostly self-borne or unaffordable which reduces the efficiency of extension agents to access current occupational safety information and innovation from Agricultural institutions within the agricultural environment. Data management and storage,

computation and statistics on Occupational Safety and Awareness for agricultural extension agents became a future dream.

According to the National Institute for Occupational Safety and Health (NIOSH) (1990), Agriculture ranks among the most hazardous industries. Farmers are at very high risk for fatal and non-fatal injuries; and farming is one of the few industries in which family members (who often share the work and live on the premises) are also at risk for fatal and non-fatal injuries. In 1990, NIOSH developed an extensive agricultural safety and health program to address the high risks of injuries and illnesses experienced by workers and families in agriculture. NIOSH supports extramural research and prevention programs at university centers in 10 states. These programs conduct research on injuries associated with agriculture, as well as pesticide exposure, pulmonary disease, musculo-skeletal disorders, hearing loss, and stress.

On how the agricultural sector is covered by national safety and health legislation, the International Labour Organization (2000) as cited by Decker et al., (2021), reviewed that there is a wide diversity of approaches in national legislation in the world, but only a small number of States have developed a comprehensive set of standards applicable to agriculture. In most cases such as is applicable in Nigeria, general labour laws do not give any specific reference in full to the agricultural sector. National legislation in Nigeria is grouped under Safety and health laws and regulations which do not exclude agriculture; and with no safety and health regulations, standards and codes of practice which specify safety and health measures concerning: – mobile machinery for agriculture and forestry, –pesticides and other agrochemicals, – list of recognized occupational diseases in agriculture, –the prevention of accidents in silos and other confined spaces,–personal protective equipment,– special protective measures for the use of explosives,–occupational medical services in agriculture, – welfare, housing and other facilities. Compensation schemes for occupational injuries, hazards, accidents and diseases are provided on a single national insurance scheme controlled by the Federal Ministry of Labour and Productivity, in collaboration with the Federal Ministry of Health which applies to all federal workers with no specific reference to the agricultural sector. This means that only extension agents and office staff in the ministry of Agriculture can benefit from the scheme as federal civil servants.

National Institute for the Rural Health Information Hub (2019), on Rural Agriculture and Safety, Occupational Safety and Health (NIOSH), Agriculture is one of the most hazardous industries with about 417 farmers and agricultural workers deaths from a work related injury in 2016, a rate of 21.4 deaths per 100,000 workers. Each day, agricultural workers experience 100 non-fatal lost-work-time injuries. Transportation incidents, including tractor rollovers, were the leading cause of death, but many other hazards exist on the farm. The study also identified chronic and acute Health risks that extension agents can be exposed to such as; Exposure to farm chemicals, such as pesticides and fertilizers, as well as toxic gases which may be produced from common farm practices like manure decomposition and silo crop storage, Exposure to high levels of dust, which can contain mold, bacteria, and animal droppings, among other things, Falls from ladders, farm equipment, grain bins, or other heights, Exposure to ultraviolet rays from the sun, which can result in skin cancer, Joint and ligament injuries, which can result in arthritic conditions affecting mobility, Exposure to loud noises and sounds from machinery and equipment which can result in hearing loss, Stress from environmental factors, such as droughts, floods, wildfires, pests, and diseases affecting crops and livestock, as well as from working long hours, financial concerns, and feelings of isolation and frustration, Risk of suffocation in a grain bin if a person is engulfed by the grain, Risk of heatstroke, frostbite, or hypothermia from working outside in extreme weather conditions, Risk of injury from operating farm equipment and motorized vehicles, Risk of injury from working with livestock, and Risk of electrocution to persons operating large equipment that can contact overhead power lines.

Hazards identified by ILO (2000) in Decker et al., (2021), which also affects extension agents as agricultural stakeholders or workers include those related to:

- machinery (such as tractors, trucks and harvesters, and cutting and piercing tools)
- hazardous chemicals(such as pesticides, fertilizers, antibiotics and other veterinarian products)
- toxic or allergenic agents (such as plants, flowers, dusts, animal waste, gloves (chrome), oils)
- carcinogenic substances or agents (such as pesticides like arsenicals and phenoxy-acetic herbicides, UV radiations, parasitic diseases such as bilharziasis and facioliasis)
- transmissible animal diseases (such as brucellosis, bovine tuberculosis, hydatid disease, tularaemia, rabies, Lyme disease, tinea, listerioses)
- other infectious and parasitic diseases (such as leishmaniasis, bilharziasis, facioliasis, malaria, tetanus, mycosis)
- confined spaces such as silos, pits, cellars and tanks
- noise and vibration
- ergonomic hazards such as the inappropriate use of equipment and tools, strained body position or prolonged static postures, carrying of heavy loads, repetitive work, and excessive long hours.
- extreme temperatures due to weather conditions and

• contact with wild and poisonous animals such as insects, spiders, scorpions, snakes, and certain wild mammals.

Also, Occupational disease identified by Decker et al., (2021) included; Articular disorders, Allergic eczema, Respiratory allergy, Vibration and shock-related disorders, Leptospirosis, Brucellosis, Noise induced impairment, and Pesticides intoxication. Some of these and hazards are also conditioned by a range of factors such as climate, fauna, population density, living conditions, level of education, training, technological development, quality of services, etc. Agricultural workers including extension agents are dependent on the general standards of public health services in rural areas where the provision of health care, adequate water supply and sanitation systems are generally insufficient.

2.4. Importance of Safety in agricultural development

In Cross River State, different administration comes with dissimilar safety, environmental and developmental policy couple with their level of performance and lack of performance. The administration between 2008 till date, have a poor safety, administrative and developmental policy implementation which has affected almost all the sectors of the State. The current administration of 2015 - till date (2022) is worse off. According to the National Institute of Food and Agriculture (NIFA, 2017), the well-being of the farmers in a country is as important as the availability of food in the country since they are vital to the nation's economy. Safety awareness and training equips farm actors with the necessary information or knowledge on how they can reduce the high level of fatalities and hazard in their occupational environment in order to safe guard the farm, farm resources, equipment and the farm family. Safety in agricultural development in Nigeria is very important especially in Cross River State which has most of the rainforest and the high level of humidity. Divers species of animals stay in the forest. Most of which are very aggressive and dangerous such as snakes, crocodiles, biting insects, insects with poisonous gas emission when they detect an intruder in their territory, plants with itching, scratching and sticky exudate, wild plants with spines and hooks, among others. Therefore, the importance of safety in this area is stressed based on the following reasons;

- ✧ Prevention of accidents and farm injury
- ✧ Enhance safe use of chemicals and fertilizer
- ✧ Save income which would have been used to treat illness, injuries and fatalities.
- ✧ To prevent any form of deformation resulting from unsafe farm environment or condition
- ✧ To enhance continuous production and availability of food produce by a farmer
- ✧ To reduce the incidence of chemical poisoning which may have a long term effect
- ✧ To ensure the safety of farm equipment which should be used for the purpose they were meant.
- ✧ To promote sanitary maintenance and servicing of farm machines and equipment consistently which will ensure it durability
- ✧ It enhances the storage of safety and accident data for future use to enhance development.
- ✧ It enhances the knowledge and practice of farmers on safety thereby improving their knowledge, attitude and skills
- ✧ It improves farmer's productivity and capacity for development

Also, PEGASUS (2017), on the importance of Safety on Farms and the Next Farm Safety Action Plan, posited that in the last decade alone, there have been almost 200 deaths on Irish farms. That today, farm safety is one of the most prominent issues in the agricultural and farming sector. More than 1000 injuries occur on farms annually. This is because farms are potentially dangerous workplaces and anything that helps in minimizing the danger is a crucial step towards reducing the current ascending number of farming related deaths and injuries. In Ireland, farmers are required to comply with the regulations under the Safety, Health & Welfare at Work Act 2005 to ensure safety on farms. The Act mandates all farmers with more than 3 employees to complete a Safety Statement. Farmers with 3 or less employees must instead follow the Agriculture Code of Practice to meet the duties under the Act. An inspection is conducted by the Department of Agriculture, Food and the Marine on candidates and farms chosen based on risk analysis conducted across the country (PEGASUS, 2017). The importance of safety to agricultural development according to PEGASUS (2017) followed a crucial goal to be pursued by an advisory committee of the Board of Health and Safety Authority to ensure compliance to safety rules, principles or practices. The important goals identified in her action plan include;

1. safety enhance the achievement of cultural behavioural change in health and safety of persons working in the agricultural sector through research, education and training.
2. safety programmes foster innovative approaches and deliver engineering solutions to reduce the risks to persons working in agriculture.
3. it reduces the level of death and injury arising from tractor and machinery use
4. it establishes initiatives that reduces the level of death and injuries arising from working with livestock.

5. it ensures that a high standard of health and safety precautions are adopted in forestry and timber work on farms.

6. it enhances the implementation of programmes for the protection of health and well-being of persons, including vulnerable groups, working in agriculture.

2.5. Challenges/Problems of extension occupation

On agricultural safety in Nigeria as a whole, Segun (2011) opined that one of the most important tasks for any developing economy like Nigeria is to develop the agricultural sector. The depletion of agricultural workers in the CR-ADP and the State Ministry of Agriculture, and the low performance according to Agbarevo (2013) are strong indications of gross inadequacy and poor attention. A strong agricultural sector can increase and generate employment, promote self-sufficiency in food, improve the standard of living, increase the gross domestic product and contribute to general development. According to him, Agricultural safety is still in its infant stages of development in Nigeria compare to most industrialized countries and some developing nations like Asia. The barriers that impede the growth and sustainability of farm safety in Nigeria include; unsafe use or practices; unsafe conditions, and lack of training in safe handling of machine and resources to increase safety to their own health and the environment. Capacity building through regular workshops and training for operators on safe machinery use and awareness programme on the effects of agricultural hazards on the public will reduce the incidence of accident in the agricultural production in Nigeria.

Extension is a system of agricultural technology generation and transfer. Divers safety constraints arises from macro-contextual factors (such as agro-ecological, infrastructural, policy, political, economic and socio-cultural factors) and from institutional contextual factors (such as: research and transfer, education and training, input supply, and credit) who are the actor's involved in activities related to agricultural extension (Peterson, 1996). The agricultural knowledge system in agricultural extension service must incorporate a large area of safety education and practices for it actor's, technology, knowledge transfer, knowledge utilization, and policies to enhance protection, improve relationship and interdependence between the farmers and extension agents, sustainability in resource utilization, positive change, improved productivity and life condition of the farmers (knowledge, skill and behaviour). The natural environment strongly influences extension planning and operations (Peterson, 1996). Also the imperfection of the environment continually unveils factors, occurrences and issues that impedes safety of extension practice. In one way or the other there may be a conflict, a hazard, a disease, an adverse reaction of the climate, an accident, a potential risk situation, or any other challenge unforeseen. Agro-ecological factors which is macro in technology generation presents a variation between different zones within a country such as differences in temperature, rainfall, soil types and evapo-transportation which is reflected in the diversify of farming conditions and production systems.

Socio-cultural differences are a major impediment to the effectiveness of the extension system which pose a lot more safety concerns for extension actors. Hence, the extension system will require a consistent update from it extension agents, including various actors at the community level on current issues in the sociocultural environment of the farmers in order to provide occupational safety tips and awareness among staff to meet current challenges, provide data management facilities for their safe operation, communication, information utilization and statistical data to improve extension services on a modern trend to solve the difficult and ever evolving socio-cultural practices in the rural populace who are mostly farmers. Socio-cultural problems may arise from a variation in language, ways or pattern of communication/interaction, high level of illiteracy, division of labor between sexes on the farm or off the farm, nature of farming system, under representation of women among the extension actors and differences in resource endowment among farmers. The extensions worker must therefore gain acquaintance of these factors and pre-security information to ensure his safety in the field during operations.

Occupational adjustment to fit in this agro-ecological and socio-cultural variation across different agricultural zones as in Cross River State places a huge burden of flexibility and adaptability on extension actor to adjust and align themselves to a different culture, communication method, seasonal operations and so on in order to impact learning and achieve learning outcomes. This behavioural, technical and environmental adjustment must be a security concern for the safety and operation of the extension. This is because farming tradition and ancient ritualistic farm practices tied to deities are still in practice in many rural areas of Cross River State. In Africa, agriculture and traditional ancient practices such as festivities, rituals and other cultural activities are entwined and inseparable. Each region, community or village has it own deity, principle, culture, norms, rules, custom, belief, rituals, taboo, practice, farming system and peace treaties between neighboring villages entirely different from the other. This also instigate a huge concern for timely awareness and community orientation by the extension agent before entry to ensure safety and perfect operation as they also pose a huge concern for extension budgeting and operations to ensure occupational safety, data collection and management.

3. Conclusion and Recommendation

A review of unsafe behaviour identified activities that disposes farmers and extension agents to risk, hazards and accident. Unsafe environment uncovered the conditions which exposes farmers and extension agents to potential hazard, risk or accident situation. Agricultural hazards increased the susceptibility of farm actors to risk, accident and illness since most hazardous practices are still inherent in Nigeria's farming activities which is known to incorporate crude farm implements. The need and importance for improving safety in agricultural extension and development was also emphasized since it enhances the achievement of cultural behavioural change in health and safety of persons working in the agricultural sector through research, education and training. Constraint to safety in agricultural extension and development examined showed that; unsafe use or practices, unsafe conditions, and lack of training in safe handling of machine and resources are source of concern in the Cross River State agricultural extension system and agricultural development.

This review of literature concludes that behavioural and environmental factors contribute to poor safety in agricultural development. These factors as indicated in the review includes negligence, drudgery, low level of awareness, poor implementation of national farm safety regulations and improper precautions in handling equipment, animals, and the environment constitute hazard to the farm and to farmers. The study also conclude that safety is crucial for agricultural development, as accident and hazards are the products of negligence and avoidance of the extra effort or cost of carrying out farm activities.

Several unsafe behaviour are exhibited by workers in the farm. The avoidance of the extra effort, tasks or costs required for safe practices has necessitated the growth of light to serious accidents in the farm. Which now makes farming more dangerous and hazardous. This review recommends that safety bodies in Nigeria should brace up to implement and enforce farm safety policies so as to reduce the level of insouciance in the farming system.

The continuous avoidance of safety practices has exposed the environment to hazards and dangers. There are landslides, uncontrolled use of chemicals on the land, air pollution, among others and their resultant effect have affected other organizations of life in the environment. Safety and awareness agencies in the country should carry out sensitization at all levels of agricultural operation to curb the level of hazards or damage that may result from any sector.

The level of hazards emanating from agricultural operations must be determined and evaluated, while also ensuring the implementation of zero hazardous practices in the Nigerian agriculture. The Nigerian Ministry of Agriculture and Farm Safety Organizations must have this mandate.

The importance of safety practices through agricultural extension must be encouraged to enhance agricultural development. Extension agents should also be saddled with the responsibility of teaching the farmers the importance of safety and advise them to practice safety in all their farm activities.

Several constraints influence the negligence of safety practices among farm stakeholders in Nigeria. More research should be carried out by agricultural researchers to ascertain all the constraints farmers experience in adhering to safe practices, while recommendations on how to address these challenges be brought out.

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