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ENVIRONMENT, HUMAN HEALTH AND SAFETY  
PERSPECTIVES TO PRIVATE SECTOR  
PARTICIPATION IN AGRICULTURE

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## ENVIRONMENT, HUMAN HEALTH AND SAFETY PERSPECTIVES TO PRIVATE SECTOR PARTICIPATION IN AGRICULTURE

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### ABSTRACT

Agriculture, unlike industrial activity which has always resulted in pollution, has been environmentally benign for most of its history until after the Second World War when the system disintegrated. Then, crop residues were incorporated into the soil or fed to livestock, the manure returned to the land in amounts that could be absorbed and utilized. Mechanized farming, however, is reliant on synthetic fertilizers and pesticides. Hence, crop residues and livestock excreta, which were once recycled have become wastes and their disposal a continuing problem for the farmer. With the present national policy on agriculture, there is the need for private sector participation especially in the area of environmental health and safety for economic and environmental sustainability.

### INTRODUCTION

Agriculture is an important sector in Nigeria since it produces food, clothing and shelter. According to the International Labour Organization (1996), agriculture has been described as covering all activities (indoor or outdoor) directly associated with cultivating, growing, harvesting and primary processing of agricultural products, animals and livestock breeding, including agricultural products, animals or any work performed in a forest and related to cultivation or conservation.

Globally, an estimated 1.3 billion workers are active in agricultural production worldwide; this figure represents half the world labour force. Although, the proportion of agricultural workers is under 10% in the more industrialized regions, almost 60% of the agricultural workforce is concentrated in the developing countries (Forastieri, 2001).

Agricultural production and land availability play a critical factor in agricultural development. As development occurs, the extension and intensification of agricultural production systems and the fluctuations in the supply of and demand for agricultural produce are causing shifts in and the environmental determination of the health status of local communities. Unlike industrial activity, which has always resulted in pollution, agriculture has been environmentally benign for most of its history until after the Second World War when the system disintegrated. Then, crop residues were incorporated into the soil or fed to livestock, the manure returned to the land in amounts that could be absorbed and utilized. After the Second World War, farms in industrialized countries have become larger and fewer in number, highly mechanized and reliant on synthetic fertilizers and pesticides. They are now more specialized. Crop residues and livestock excreta, which were once recycled have become wastes and disposal became a continuing problem for the farmer. Straw is burnt, as this is the cheapest and quickest method of disposal.

A distinguishing characteristic of agriculture is that it is carried out in an essentially rural environment where working and living conditions are interwoven. Agricultural work is also subject to health risks specific to rural environments as well as those derived from the specific work processes involved. There are therefore difficulties in dealing with its various safety and health problems.

Some specific features of agricultural work include workers exposure to varying weather conditions, variety of tasks performed by the same person, amongst others. These features however, have different environmental health and safety problems.

Some environmental and health problems associated with agriculture include methane emission from livestock production, thereby contributing to climatic change,(Durning and Brough, 1992), hypersensitivity to droppings and feathers, zoonoses (infectious diseases naturally transmissible between animals and man which include anthrax, rabies, tuberculosis, toxoplasmosis), amongst others. Numerous biological agents have been implicated in the development of cancer in humans and some of them have been reported to be closely related to working conditions in agriculture (African Newsletter on Occupational Health and Safety, 1994).

However, very little has been done either by government or non-governmental organizations in alleviating these problems that associate with agricultural activities. There is therefore the need by individuals and privately owned establishments to be involved in this enormous task for an environmentally, friendly healthy and safe agricultural production.

The primary environmental contaminants produced by agricultural activities arise from the use of agrochemicals especially pesticides and fertilizers. Contamination occurs when farmers use them for crop and livestock protection as well as improvement of yields. Contamination is also caused by various wastes produced by agricultural processes in the same way that contamination is caused by industries. The waste comprise straw, silage effluent, livestock slurry, wastes from on-farm processing of agricultural products such as oil palm and sugar. From the immediate environment of the farm, contamination spread to food and drinking water, to the soil, to surface and ground waters and to the atmosphere.

The objectives of this study therefore are:-

1. To assess the environmental health and safety problems associated with agriculture.
2. To recommend the way of minimizing health and safety problems associated with agriculture

#### MATERIALS AND METHODS

Two privately owned farms were used for the study. One is located in the Odeda Local Government Area of Ogun State while the other is at Lanlate, Oyo State. The former produces livestock while the other produces arable crops as well as cash crops. However, the two farms were under the same management. A total number of 50 respondents were selected for this study. Questionnaire was administered to them so as to elicit some information. The questionnaires were then analyzed using the Chi-square test.

#### RESULTS AND DISCUSSION

Data analysis revealed that 80% of the farm workers were male and majority of them fall within the age limits of 31-40 years, 24% between 21-30 years, 22% were between 41-50 years and only 4% of the respondents were 50 years and above. The result showed that the most vibrant age group are engaged in agriculture especially as hired workers (the older people are more involved in subsistence agriculture). They are therefore more exposed to environmental and health hazards associated with agriculture.

Table 1 shows the job type of respondents on the farm. Farm labour constituted the largest percentage of job types on the farm. The study also revealed that of the total respondents, over 70% were exposed to pesticide use on a daily basis as shown on Table 2. The respondents were therefore predisposed to pesticide poisoning (both acute and chronic), with consequent risks of lung cancer, brain damage, liver and kidney necroses, cardiac dysrhythmia and psychiaeric disorders (Opeolu and Fadina, 2000). The survey also revealed that wastes from the farms are being discharged into nearby streams and that a good percentage of natives use the streams for domestic and drinking purposes.

Table 1: Job Type of Farm Workers

Job Type	Frequency	Percentage
Poultry Workers	11	22.0
Sales	3	6.0
Feed mill Workers	2	4.0
Hatchery Operators	6	12.0
Machine Operators	6	12.0
Farm Labour	16	32.0
Supervisor	4	8.0
Others	2	4.0
Total	50	100.0

Table 2: Pesticide Usage by Farm Workers

Pesticide Usage	Frequency	Percentage
Daily Users	36	72.0
None Users	4	8.0
Weekly Users	1	2.0
Monthly Users	5	10.0
Others	4	8.0
Total	50	100.0

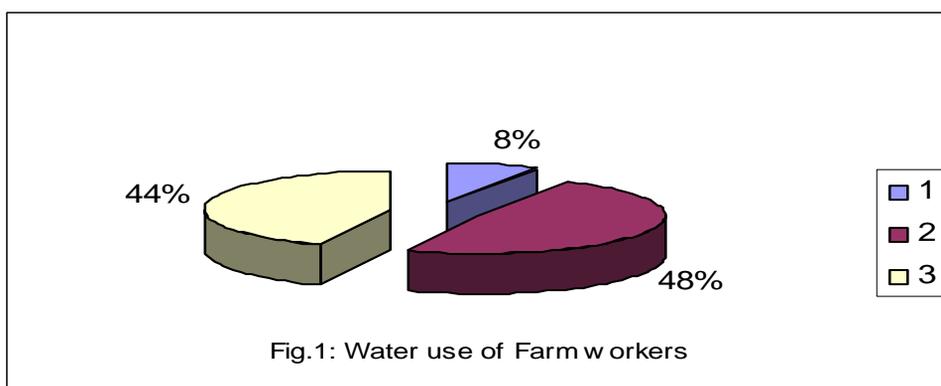


Figure 1: Water use of Farm Workers

On safety, over 80% of farm workers used one form of protective gadget or the other, and so not much accidents occur on the farms. Though, the so-called gadgets are ideally inadequate since few of the workers were using nose masks, none used ear protective masks. Protective coats and boots were being worn by most workers.

There was considerable noise pollution from the equipment being used on the farms. They included tractor, egg hatchers, planters, miller, and bulldozer. More than half of the equipment has been in use for over 10years while about 12% were under 10 years. Considerable noise pollution was also being generated from the farm machineries with no protection from noise effects for the workers.

Of all the respondents, 48% have been involved in accident while 52% never had accident, 70% of the accident victims confirmed having been given prompt first aid treatment after the accident, while about 30% reported slight delay (10-20 minutes). Hence, the health service of the establishment can be said to be relatively effective. Health disorders suffered by worker are shown in table 3 below:

Table 3: Health Disorder Suffered by Workers

Health Disorder	Frequency	Percentage
Loss of smell	2	4.0
Nose bleeding	1	2.0
Weakness	10	20.0
Cold	3	6.0
Difficulty in Breathing	9	18.0
Pains	15	30.0
Skin rashes	10	20.0
Total	50	100.0

The major health problems which include difficulty in breathing, pains and skin rashes can be attributed to chronic exposure to pesticides as well as zoonoses (e.g. tuberculosis) especially, the workers on the livestock farms. Treatment alternatives of the workers are shown on Figure 2.

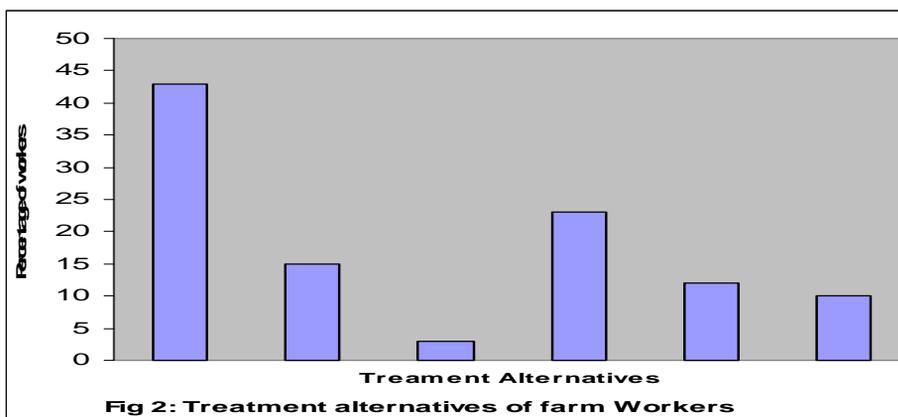


Figure 2: Treatment alternatives used by workers

Pearson Chi-square was used to test if there was a significant difference in illness suffered by workers and frequency of pesticide usage. The results showed that frequency of pesticide usage have no significant effect on illness suffered. Some of the illness-suffered frequently by workers may be due to other reasons rather than occupational exposure to agro-chemicals. The health record of the workers confirmed, for instance, because there was no record of upper respiratory disorder as might be expected from those working in poultry and feed mill.

#### CONCLUSION AND RECOMMENDATION

This study was carried out to examine the environmental health and safety problems associated with Nigerian agriculture and how the private sector can be actively involved to at least reduce the problems to the minimum.

In the area of waste management, the private sector can invest in the “Waste- to –wealth” concept that is being adopted elsewhere. This involves the use of wastes to either make new products or to re-cycle them. Farm manure is rich in nitrogen and so can be processed into organic fertilizers that farmers can buy. Some government agencies have been doing this, but not sustainably.

It has also been found that plant materials have potential to remove pollutants from soil and water resources. Research in this area should be funded by private sector participation; patented and then sold to nations that have pollution problems.

The private sector can also invest in sales of protective gadgets because some of them are not readily available in Nigeria. This is important because there is the need to protect the workers because, their health is an important factor in their productivity and consequently, national development.

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