INVESTIGATION OF FARM ACCIDENTS IN SOKOTO, KANO, ZAMFARA, KEBBI AND KATSINA STATES

BY

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MATRIC. NO. 95/4387

BEING A FINAL YEAR PROJECT SUBMITTED IN PARTIAL FULFILMENT FOR THE AWARD OF BACHELOR OF ENGINEERING (B. ENG.)

AGRICULTURAL ENGINEERING.

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

JANUARY 2001

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DEDICATION

I dedicate this project to the entire families of Superitendent of Police Mohammad Alhaji (RTD) and Alhaji Usman T. Mohammad, also to the aged, poor, disabled, destitudes and above all to the Almighty Allah for His devined mercy and love.

CERTIFICATION

This is to certify that this project was carried out by Mohammad Abubakar Sadeeq in the Department of Agricultural Engineering, Federal University of Technology, Minna.

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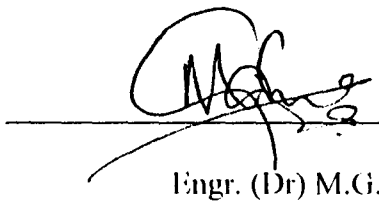

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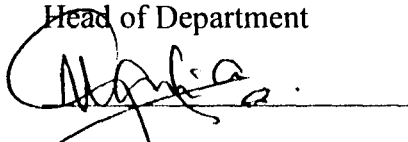

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ACKNOWLEDGEMENT

My profound gratitude to Almighty Allah for sparing my life throughout the period of pursuit of my academic career.

My indebtedness to the Head of the Department as well as my project Supervisor, Engr (Dr.) M.G. Yisa for his absolute mastership over my project. His technical advice, intelligence and academic capabilities was able to liberate me to a greater height in academic career.

Also, my sincere appreciation goes to Mallam Bashir Mohammed, Mr A.T. Alabadan, Engr (Dr) J.O. Odigure, Mrs Z.D. Osunde, Engr O. Chukwu, Engr (Dr) Donald Agidzi, Mrs L. Fadipe, Mr K. Salami, Mr Idah Peter for their courteous and useful assistance throughout my academic pursuit.

Finally, I also appreciate the great efforts of all my friends: Kenneth Enebuse, Uka Friday Israel, Egbebu Obinna, Ogbudu Samson, Miss Sadiq Maimuna, Miss Victoria Akoh, Leonard Unaegbu, Omoko Ufoma, Ekundayo Samuel for their assistance in making this work a success.

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ABSTRACT

This project was aimed at finding the causes of farm accidents, types and nature of farm accident, damage done by major and minor accidents, cost of farm accident and ways of reducing farm accidents in the north-west zone and also in the three zones so far investigated in this country (Nigeria). These included western zone, middle belt zone and the south-east zone. Research questionnaires were used to achieve this objective. In achieving this purpose, an Investigative Survey Research Approach (ISRA) was adopted. The project findings indicated that the majority of the respondents were male, 75% and most of the farms were government owned. The major cause of farm accident is environmental factors followed by human factors. Also for the four zones the major causes of farm accident is environmental factors with 33.37% on the average, human factors with 24.66%, exceeding the limitation of the equipment 9.78% and terrain factors 4.22%, the remaining 27.97% is for other factors which are as a result of mechanical, electrical and chemical causes. The cases of farm accidents can be reduced through proper maintenance, organising workshop on safety to the old and newly employed operators and mechanics. Farm accidents could also be reduced by highlighting farmers the dangers of neglect as regard to farming activities and possible measures on how to improve efficiency of farming operations without accidents.

CHAPTER ONE

1.0 INTRODUCTION

The development of advanced machinery and the increasing application of modern technology in Man-Machine-environment-Systems have resulted in more comfort for man's everyday living. The farm is no exception. Perhaps, the one machine that ushered in farm mechanization and which has done more than its fair share towards the drive for increased food production for the world's teeming population, is the tractor.

It seems essential therefore, that considerable attention should be directed towards the prevention of tractor and other machinery accidental deaths and injuries.

"Safety first" is a slogan that should be kept in mind at all times. Though, it has been a cinderella of some thoughtless and careless farmers and most operators of farm machinery.

Over the decades, attempts by experts have been made to remove drudgery in farming activities, and for this reason simple mechanical and engine-power equipment were designed and constructed for the purpose of carrying out the most tedious job by human effort within a short period of time and at a reasonable and affordable cost. Individual farmers or operators of any farm machinery who lacks or neglects the safety procedures guiding the effective operational techniques of farm utilities are prone to accidental deaths and injuries.

Whereas farm traffic accidents were considered rare events they have been found to constitute some danger in the modern times. Both the developed and the developing nations of the world alike have suffered from the threat in varying degrees. In numbers,

the developing countries clearly dominate. So in view of these threats, several research organisations, scholars and practitioners in the area of farm traffic accidents have long recognized and addressed various aspects of these problems as presented in the works on accident data and analysis, safety programme planning and implementation, safety programme evaluation, lessons from developed countries, experiences in developing countries and insurance and legal aspects.

Farm related accidents often result in minor or major injuries which could sometimes lead to permanent disability or even death of the farmer or the machine operator.

On the farm, accidents are prone during the use of power-driven machinery and other field operation machinery. Perhaps, tractor is involved in more farm accidents than any other type of farm machinery, largely, because of its versatility and extensive use.

Accidents are also likely to occur as a result of using handtools such as hoes, axes, matchets, stones, diggers, other garden tools etc. Other forms of accidents could be as a result of snake bites, bruises, drowning, fire outbreak, falls, bees invasion, chemical explosives and miss-handling of agro-chemicals.

1.1 Aims and Objectives of the Project

i. To investigate the causes, types and nature of farm accidents in the north-west zone of the country.

ii. To know the extent of damage as a result of farm accidents.

iii. To findout the approximate estimates on the cost of repairs (rehabilitation) depending on the degree of damage.

iv. To know the effects of farm accidents on farm families and to the nation's economy.

v. To give some useful suggestions on how to prevent minor, severe and fatal accidents on agricultural fields.

vi. To establish a comparative analysis on farm accidents in the four zones (middle belt, west, east and north) of the country.

vii. To recommend safety strategy against farm accidents in farm stead.

1.2 Project Justification

Farm-related accidents continue to claim more lives or render a significant number of farmers and operators of farm utilities useless or unfit for any productive agricultural activities, thereby reducing the working force on agricultural activities, this tends to affect agricultural production in the country (Nigeria). For this reason, research into the cases of farm accidents was deemed necessary to be conducted so as to know the cases of farm accidents, extent of damage, types and nature of farm accidents, cost of repairs (rehabilitation) and its effect on the nation's economy.

1.3 Scope of the Project

The investigation covered Kano, Katsina, Zamfara, Sokoto and Kebbi states. To aid this study the researcher administered some questionnaires to some individuals actively involved in farming operations also oral interview help for sourcing information whereby administering the questionnaire became unlogical. A thorough analysis of the questionnaire were made on the causes, types, effects, and costs of farm accidents. Meaningful suggestions on preventive measures against farm accidents and ensuring good service life (Maintenance Culture) of farm utilities.

1.4 Statement of the Problem

As the world's population is continuing to grow on daily s may be grouped into three namely: Man, Machine and environment. Though environmental conditions that affect operation cannot be changed much. This leaves us with the man and his machine.

1.5 Research Questions

1. What are the types of farm accident experienced by the establishments, since inception?
2. What is the degree and frequency of occurrence of farm accidents in the establishments?
3. What is the extent of property loss or damage to farm machinery as a result of these accidents?
4. What is the estimate cost on maintenance or rehabilitation of farm machinery?
5. What are the factors contributing to these accidents?
6. How are accidents reported cases handled in the establishment?
7. How can the situation be improved upon to prevent or minimize farm accidents to the bearest minimal.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 What Constitutes an Accident?

The Dictionary of Agricultural and food processing Engineering defines an accident as:

1. An unplanned but, not necessarily damaging event which interrupts the completion of an activity.
2. An injury requiring medical care or loss of one half day or more of time.

Gordon and Aycock (1949) defined accident as "a chance event developing without foresight or expectation, and resulting in injury or loss".

Suchman (1961) defined accident as "that class of event which involves a low level of expectedness, avoidability and intention.

Arbous and Kerrich (1953) wrote: "In a chain of events each of which is planned or controlled, there occurs an unplanned event, which, being the result of some non-adjustive act on the part of the individual (variously caused) may or may not result in injury. This is called an accident."

Honfmeister and Pfister (1969) wrote: "An accident was considerably reportable if it resulted in injuries which required professional medical care or the loss of one-half day or more from normal activities.

Thus, the term accident could be defined as an act or event that happens by chance and unexpectedly which is characterized by subjecting machine to mechanical

damage or exposing human body to injury, thereby requiring professional medical care or loss of man-hour through sickness from usual activities.

2.2 Accident Causation

McGlade and Laws (1962) in their traffic safety Research Review noted that, there is an intrinsic, measurable cause of all accidents (which is also called first order) and that it is possible to get insights into this cause by studying the situations and activities in which accidents occur. This first order cause of accidents can be generalized as follows: Inadequacy of safety learning. All other factors involved in accident causation evolved from safety learning.

The stress adjustment-stress theory, Kerr (1964) "Holds that unusual, negative, distracting stress upon the organism increases its liability to accident or to other low quality behaviour".

Furthermore, it was observed that this is a climatic theory, because environment is internal as well as external, and this theory refers to destructive negative stresses imposed upon the individual organism either by internal environment (such as disease organism, alcohol, or toxic items) or by external environment (such as temperature excesses, poor illumination excessive noise level, excessive physical work strain).

In general, any control lever that is unnecessarily difficult to reach and operate, any instrument that is difficult to read, any seat that causes poor posture or discomfort, or any unnecessary obstruction to vision may contribute directly to an accident. This is revealed by McFarland (1958). Similarly, many accidents occurred when the efficiency of the operator was impaired by some temporary conditions, and that the efficiency and

safety of driving might be adversely influenced by fatigue. This seems to support the adjustment-stress theory, (McFarland, 1958).

2.3 Farm Accidents

The gravity and severity of farm accidents cannot be ignored as compared to urban accidents. Large number of farmers and tractor operators have learned many things about this strange mechanical beast, - the tractor – and often at a considerable cost in money. In injuries and sometimes in operator's life.

Person (1967) noted that about 20 to 25 tractor operators were killed per year per 100000 tractors in countries with mainly level land, most of them by tractor overturning. In mountainous countries the fatality rates were higher. The National Safety Council (1973) reported that there were 6,400 deaths and 570,000 disabling injuries to farm residents in United Stat3es in 1972. The National Safety Council (1975) reported 2,100 accidental work deaths in agriculture in 1975, of which 1,500 involved farm residents while 600 involved non-farm residents. The respective disabling injury totals were 200000, 150000 and 50000.

Singleton and Whitfield (1973) stated that of the 331 fatal accidents which occurred in the United Kingdom from 1968-1970, 160 of them involved tractors.

2.4 Farm Accident Characteristics

Farmers, their facilities, and their employees work under conditions quite unlike those in urban industries. The entire farm family, including children and the aged, is usually engaged in the farm enterprise where an operator is exposed to machine system

which may result in a tractor or any other machinery accident. A few characteristics with respect to farm accidents are reviewed here.

2.4.1 Age

In Australia, Baillie and Grevis – James (1970) found that the majority of the tractor accidents was caused by persons between the ages of 15 years and 19 years, followed by those in the 20 to 22 years group. They also noted that inexperience or recklessness or a combination of both were the reasons for the higher risk withyoung drivers.

Gadala (1962) found from his survey that people between the ages of 20 and 30 years had the highest accidents rate – 190,9 accidents per thousand population.

Stuckey and Gill (1968) reported that during the period 1955 to 1967, in Ohio, 450 people were killed while operating farm tractors. Of these, 19% were under 16 years old while 22% were over 65 years old. Those between 26 and 65 years accounted for 42% of the deaths.

Hofmeister and Pfister (1969) analyzed the results of data obtained from Michigan State for the year 1967-68 for farm work accidents of farm family members by age and sex. They found that there was little variation in accident rates for females of various ages. For males they found that the accident rates for the 5 to 14 years olds were high.

Doss and Pfister (1974) analyzed tractor accident rates of various operator age groups and found that operators under 15 years had the highest accident rate followed by operators who were 65 years and above. Tractor operators in the 25 to 44 age group had the lowest rate.

2.4.2 Experience

While it may be true to suggest that experience comes with age, it is nonetheless, difficult to assess accurately the influence of inexperience on the safety record of young drivers.

Suggs amd Huang (1968) found that, in 1000 tractor accident deaths, 95% of the operators involved had about one year driving experience, 63% of the fatal accidents were attributable to poor judgement or ignorance of the danger involved.

2.4.3 Education and Training

Education is another means of effectively reducing farm traffic accidents. Obviously it is clear that most farmers and operators are aware of the factors that could cause farm-related accidents. Hesitation can and indeed, does contribute towards accidents occurrence. Proper training and adequate practice do away with hesitations.

Hansen (1966) stated that accidental injuries and fatality rates could be reduced by more thoroughly educating everyone who uses farm machinery.

McFarland and Moore (1964) compared the safety record of trained drivers to that of untrained drivers. Based on 1226 accidents which occurred during 300 driven-months, they stated that the untrained drivers had about double the number of accidents the trained drivers had in both sexes and in different age groups.

Reviewing the findings of Kiel and Bjerninger (1966) they reported that a large number of accidents was due to human factors such as inadequate training, insufficient

knowledge, lack of experience and thoughtlessness, environmental factors and road factors.

2.4.4 Reducing Accident Rate

Knapp (1966) worked on man-machine-relationship in tractor accidents and reported that the man-machine relationship is obvious in tractor accidents and that the manufacturer of the tractor must accept a larger responsibility for reducing unseen physical damage and trauma producing accidents to operators. He concluded that over 75% of all tractor fatalities studied could have logically been prevented if appropriate protection had been afforded to the tractor operators.

2.5 Safety

There is an increasing concern today in industry, Agricultural organisations and education for the value of human life. Industrial companies are experimenting with and implementing safety devices. Governments are becoming involved in both equipment-safety standards and agricultural employee standards. Professional bodies are setting up safety standards and universities are carrying out research and educational programs in an effort to reduce hazards to the bearest minimal.

Safety in the agricultural environment differs in several important respects from safety in other contexts. The operator of an agricultural tractor or other machinery may work in an area generally removed from direct supervision and often completely isolated. With no foreman present to supervise, and often, without a co-worker to assist, the operator must rely upon the design of the machine, his or her own knowledge and

experience, and the information provided by safety and operator's manuals to perform field tasks.

Zink (1968) said that agricultural engineers have a continuing responsibility to recognize new hazards, new irritants, new danger-producing situations. The more comfortable, trouble-free, and efficient the manufacturers can make the equipment, the safer will be that portion of the environment in which the operator must work.

Wardle (1972) said "There are those who claim danger, hazard, injury and death are the price we pay for progress. To a degree this may be true. However, we should never use this as an excuse for not exerting every effort possible to make all machines, all equipment, all operations as safe as we possibly can."

Tractor accidents are mostly inform of overturning. A clear number of working accidents do occur on slopes and these are of two types. First one is accident due to stability loss and this happens when the tractor overturns directly while the second type is control loss accident which occurs when the tractor runs out of control before overturning sideways. Overturning is highly associated with travelling of tractor across the slope. Yisa and Torao (1995), confirmed that sideways overturning accidents have been the most common overturning accidents accounting for about 70% of the total accidents due to tractor overturning. Furthermore, it is possible that a most stable machine would undergo overturning when it reaches the limit of static stability or reaching stability limit under dynamic conditions.

Owen and Hunter (1983), in their report gave some case studies of stability and control loss accidents. A case of a tractor with front-end-loader which was used to ~~and~~

move a heavy tree trunk overturning sideways as the tractor was being turned down the hill on a slope of 8% was reported. The accident happened because of the in-ability of the tree trunk to have been lifted centrally on the front-end-loader, but rather balanced with its centre of gravity towards one side. Here, the static stability limit was believed to have become very low since the heavy weight of the trunk had actually shifted the overall centre of gravity forward and even towards one side. This this type of accidents rarely occur as reported by Owen and Hunter (1983).

A case of dynamic stability loss that resulted to an accident waqs also reported by Owen and Hunter (1983). A tractor was been used with drag harrows hitched and was working directly up a slope of 29%, though they reported that the surface was dry, but the soil was loose with gravels which led to the overturning of the tractor rearwards without any sign of warning. Another example of dynamic stability loss was where a tractor had a serious accident in any attempt to take a sharp bend at a relatively high speed.

Joshua (1997) reported five cases of farm accidents in the middle belt of the country (Nigeria). Two of which involved tractors and the rest were due to environmental and human factors. The first one involved a four-wheel drive tractor driven at night on a high way from the farm without headlight nor trafficators, when incidentally it had an head-on collision with an on-coming truck loaded with fertilizer. There on the spot the operator died and others sustained serious injuries which required adequate medication. The second case happened when three men were fixing the rear wheel of a tractor, when unexpectedly they experienced a lifting jack failure. Two men had slight cuts and sustained bruises. She also reported a case of a flood disaster that

destroyed a vast area of agricultural land. Setting bush on fire and excessive land grazing are parts of human factors.

CHAPTER THREE

3.0 METHODOLOGY

The method adopted for this study is the Investigative Survey Research Approach (ISRA). The frame work for adopting this approach (ISRA) involves the distribution of questionnaires to the farm related organisations and their subsequent collection for analysis. Oral interview became logical and was used within local illiterate farmers.

3.1 Method of Data Collection

The questionnaire was prepared and produced into several copies after which the researcher embarked upon on 5-states survey in the north-west region of the country (Nigeria) where the questionnaires were distributed to some families among which were the technicians, craftsmen, engineers, operators as well as farmers. After which a day or two was meant for the collection of the attained questionnaires and in a situation whereby the distribution of the questionnaires became illogical oral interview aided the study.

The questionnaires used for this study comprised of two sections (A &B). Section A consists mainly of the characteristics of the respondents, the reconnaissance inventory of agricultural machinery in use in the various farm organizations with specific regards to the number of tractors and other machinery all within the organizations so also to know the different types of tractor models and subsequent description of the farms in terms of their geographical location, major operations carried out and establishment.

The second part which is the section B was more elaborate consisting of various questions meant to find out the following:

i. Types of farm accidents and their degree of severity whether minor, major or fatal.

ii. Causes of various farm accidents so far recorded.

iii. Category/class of people mainly involved in the case of accident on the farm and its negative consequences to the farm family and to the nation's economy.

iv. Frequency of occurrence of such accidents.

v. Cost in terms of money, property damage, time losses and life losses all as a result of farm accidents.

3.2 Procedure

The researcher administered a sum of 250 copies of questionnaires to farmers, operators, researchers and other personnel in the field of agricultural production. The selected states are from northwest zone which include Sokoto, Kano, Zamfara, Kebbi and Katsina states. The research study was undertaken so as to know the actual reasons for farm accidents from different cadre of respondents in their different localities.

Perhaps, some modalities are taken to reducing farm fatalities to the bearest minimal. Though, about 250 questionnaires were administered among farm families only 180 were fully completed and returned to the researcher coupled with oral interview with some farmers and operators. So the analysis of the data is strictly based on the returned questionnaires and the oral interview.

The questionnaire description

Section A: Consist of the following:

Geographical Location ----------

Name of Establishment ----------

Local Government Area ----------

State ----------

Major Operations ----------

Respondent's Age ----------

Qualification and Status ----------

Years of Working experience ----------

Section B: This section is more elaborate as it inquires more information and deals with questions concerning the types of farm accidents, causes of various farm accidents recorded, category/classes of people involved in any case of accident, experience of operators(skilled or unskilled), frequency of accidents, and at what season of the year are accidents case higher, cost in terms of property damage, money, life losses, man-hour through sickness and also machine-hours all resulting in low productivity.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

The objective of the Chapter is to focus on the analysis of the data collected from various establishments through the questionnaire administered and the oral interview between the researcher and the farmers/operators. Also by the use of statistical method displayed through tables and graphs would serve as a prelude to a more comprehensive discussion on reasons for farm accident and the possible control measures to be adopted towards the reduction of farm accident in machinery operation system.

The data were analyzed in two sections; general characteristics/attitude of respondents by statistical method, establishment ownership. The analysis in the first section is done by cross tabulating the characteristics/attitude of the respondents through demographic variables. The second section is based on the analysis of causes of farm accidents areas under investigation, analysis on types of farm accidents, analysis on the extent of damage as a result of minor or major accidents, a general comparative analysis of the four (4) zones covered in Nigeria and ways on how to manage agricultural implements/equipment and case study.

4.1 Accidents Statistics Based on the Collected Data (Comparative Analysis of Farm Accidents in all the Selected States).

Records on farm accidents in private and Governmental farms in Sokoto, Kano, Zamfara, Kebbi and Katsina States respectively for some given years.

TABLE 4.1.1 Classification of Accidents per State

STATE	YEAR	NUMBER OF FATAL ACCIDENT RECORDED	%	NUMBER OF SEVERE CASES	%	NUMBER OF MINOR CASES	%	NUMBER OF PEOPLE KILLED	%
Sokoto	1986-1995	29	46.77	59	35.12	435	34.17	5	33.33
Kano	1991-1996	12	19.35	36	21.43	397	31.19	3	20.00
Zamfara	1990-1994	5	8.06	21	12.50	209	16.42	1	6.67
Kebbi	1987-1993	13	20.97	40	23.81	125	9.82	4	26.67
Katsina	1993-1998	3	4.84	12	7.14	107	8.41	2	13.33
Total		62	100	168	100	1273	100	15	100

TABLE 4.1.2 Farm Accidents Trend within the various States Over some given periods.

STATE	YEAR	ESTIMATE OF FARM MACHINERY/IMPLE-MENT AND EQUIPMENT IN USE	TOTAL NUMBER OF FARM ACCIDENTS CASES RECORDED	TOTAL NUMBER OF PEOPLE KILLED	ACCIDENT/ DEATH
Sokoto	1986-1995	1635	528	5	106
Kano	1991-1996	1370	445	3	148
Zamfara	1990-1994	989	236	1	236
Kebbi	1987-1993	491	182	4	46
Katsina	1993-1998	281	124	2	62

4.2 Characteristics of Farm Accident Victims.

In this case, an attempt was made to obtain data on age-sex structure of farm accident fatalities.

TABLE 4.1.3 Age-Sex Structure of Farm Accident Victims

STATE	10-20 (yrs)		21-30 (yrs)		31-40 (yrs)		Above 40 (yrs)		Total	%
	M	F	M	F	M	F	M	F		
Sokoto	57	18	78	15	55	10	11	-	244	36.36
Kano	49	11	53	12	40	6	5	-	176	26.72
Zamfara	24	5	36	-	21	5	4	-	95	14.16
Kebbi	35	7	40	4	20	-	2	-	108	16.10
Katsina	19	3	20	-	5	-	1	-	48	7.15
TOTAL									671	100

Table 4.1.3 above, shows that a total of 671 farm accidents victims was reported. Based on this study, approximately 82% of all farm accident fatalities occurred on the scenes of accident and only 18% occurred later in the hospitals. The field data also shows that about 85.7% of farm fatalities were males while only 14.3% were females.

TABLE 4.1.4 Farm Accident Mortality Indices

AGE GROUP	10-20	21-30	31-40	ABOVE 40
Mortality Index	3.4	4.3	2.7	-

Using the mortality index;

$$MI \qquad \frac{Fg \times K}{Sg \times Tf}$$

Where MI = Mortality Index

Fg = Total number of fatalities for the age group in question

Sg = Span of the age group given in years

Tf = Total number of fatalities

K = A constant = 100

Group a 10-20

$$\frac{228 \times 100}{10 \times 671} = 3.4$$

Group b 21-30 (Years)

$$\frac{258 \times 100}{9 \times 671} = 4.3$$

Group c 31-40 (Years)

$$\frac{162 \times 100}{9 \times 671} = 2.7$$

Table 4.1.4 above shows mortality indices calibrated for all the age groups with the exception of those above 40 years old. Also from the same table we observe that the 21-30 years age group has the highest farm accident mortality index, 4.3. The 31-40 age group has the lowest mortality index. The 40 and above age group is however not considered; this is probably because people in that group do not participate actively in farming operations.

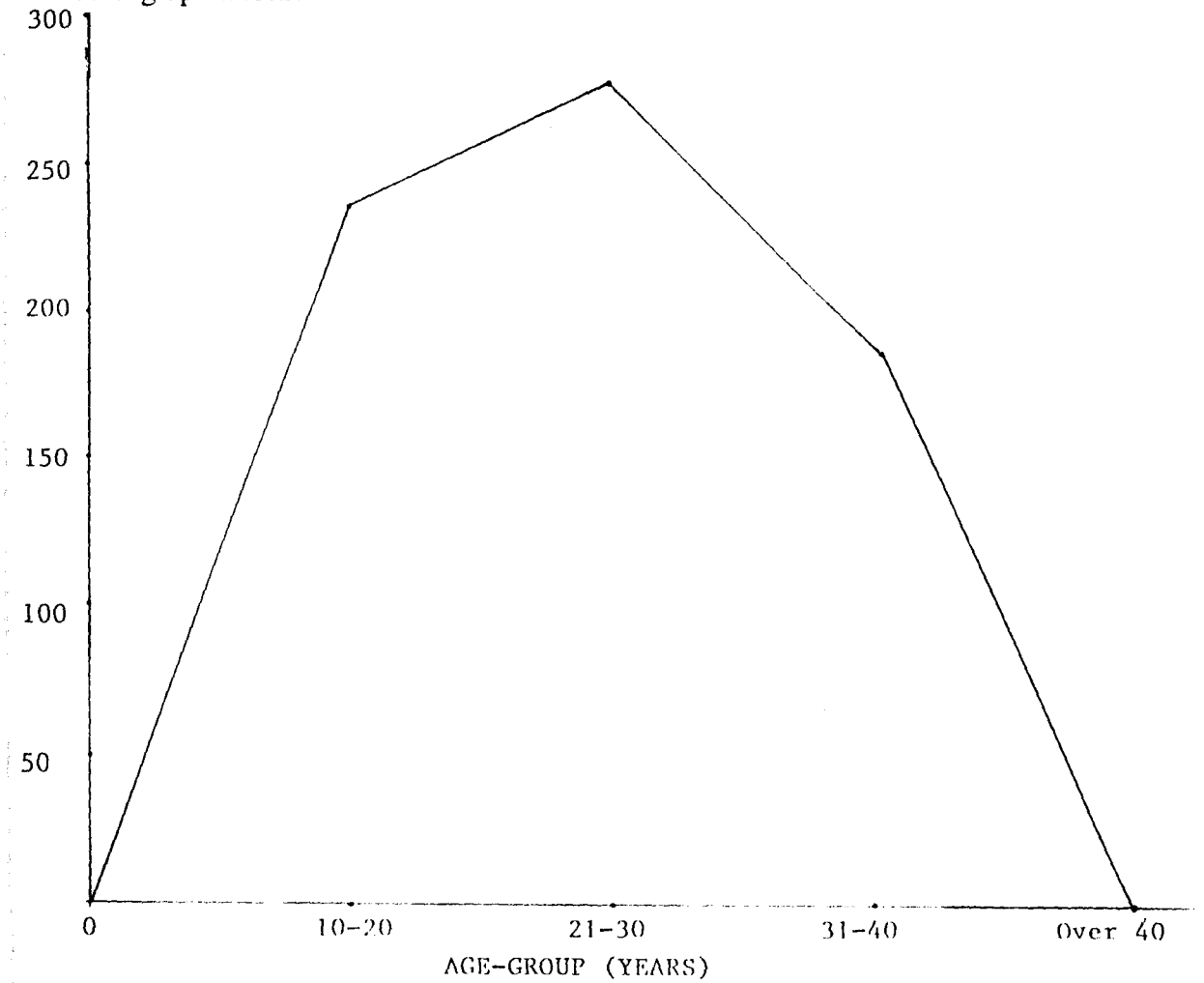


Fig. 1 Graph showing the Age-structure of Farm Accident fatality.

The information obtained during the field survey with regard to the causes of farm accidents are essentially due to adequacy or inadequacy of the operators response to their environment several factors help to explain this response to the environment. The factors range from their skills which were derivable from their training, to their personalities. Other aspects in which the operators could be examined range from the physical to the socio-economic and psycological factors. In this study, some important measurable ones such as age, educational background, years of operator's working experience in handling farm machinery among others are useful measures of their personality, maturity and temperament and all these could have a direct influence on the operators operating functions.

Table 4.1.5 shows the age of farm machinery operators, Table 4.1.6 their educational background while table 4.1.7 indicates their years of working experience. Also Table 4.1.5 indicates that 66.2% of the operators are in the 31-40 years age category meaning the average working force of every productive nation. Only about 32.6% were below 30 years of age, while 1.5% were above 40 years of age.

TABLE 4.1.5 Age of Farm Machinery Operators

Age Group	Case I Sokoto		Case II Kano		Case III Zamfara		Case IV Kebbi		Case V Katsina		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
25-30	15	32.6	12	34.3	13	35.1	10	23.8	14	36.8	64	32.3
31-35	21	45.7	16	45.7	14	37.8	20	47.6	18	47.4	89	45.0
36-40	10	21.7	5	14.3	9	24.3	12	28.6	6	15.8	42	21.2
41-50	-	-	2	5.7	1	2.7	-	-	-	-	3	1.5
Total	46	100	35	100	37	100	42	100	38	100	198	100

TABLE 4.1.6 Educational Background of Farm Machinery Operators

	Case I Sokoto		Case II Kano		Case III Zamfara		Case IV Kebbi		Case V Katsina		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
No formal Education	5	11	-	-	2	0.7	6	2.0	-	-	13	0.8
Primary Education	130	29.9	118	24.7	81	26.8	67	22.9	53	34.4	449	27.0
Secondary Education	233	53.6	310	65.0	180	59.6	205	70.0	97	63.0	1025	61.7
Diploma	67	15.4	48	10.1	39	12.9	15	5.1	4	2.6	173	10.4
Degree	-	-	1	0.21	-	-	-	-	-	-	1	0.1
Total	435	100	477	100	302	100	293	100	154	100	1661	100

Table 4.1.6 indicates that about 99.2% of the farm machinery operators have formal education. only 0.8% of the entire operators have no formal education

TABLE 4.1.7 Years of Operators working experience

	Case I Sokoto		Case II Kano		Case III Zamfara		Case IV Kebbi		Case V Katsina		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
5-8	14	31.8	11	35.5	7	35	8	44.4	4	21.1	44	33.3
9-12	11	25.0	5	16.1	7	35	5	27.8	6	31.6	34	25.7
13-15	9	20.5	3	9.7	.5	25	3	16.7	2	10.5	22	16.7
15 above	10	22.7	12	38.7	1	5	2	11.1	7	36.8	32	24.2
Total	44	100	31	100	20	100	18	100	19	100	132	100

Table 4.1.7 virtually in all the states mentioned above, the least number of years of working experience of any farm machinery operator is five years.

S/N	Type of Accident	Number of accident cases reported	Sokoto	Kano	Zamfara	Kebbi	Katsina	%
1	Tractor Overturn	13	5	3	-	4	1	0.75
2	Poisoning	13	5	2	-	-	6	0.75
3	Power-driven Machines	92	31	26	10	16	1	5.33
4	Falls	258	73	53	29	61	42	14.96
5	Workshop/tool And other freed Machinery	677	189	205	102	98	83	39.05
6	Fire	65	23	15	18	4	5	3.77
7	Tractor PTO	4	-	-	-	3	1	0.23
8	Drowning	214	40	12	-	162	-	12.41
9	Tractor/implements/ Equipment Failure	8	-	3	1	-	4	0.23
10	Draught Animals	104	35	25	15	20	9	6.03
11	Vehicles(car,truck, Van. trailer)	102	40	36	5	13	8	5.91
12	Beasts (Snake. scorpion)	175	53	60	31	20	11	10.14
	Total	1725	493	444	216	397	175	100

Table 4.18 above. it could be clearly seen that the majority of the farm fatalities/injuries approximat3ed at about 39.25% were as a result of using workshop tools and other field machinery. This is simply because the tools and other farm machinery are more involved in carrying out varying farm tasks than other types of farm accidents. It was also approximated that about 12.41% of farm families were drowned, while other types of accidents though could be fatal but rare were the tractor power-take-off (PTO) entanglement and tractor implements/equipment failure with only about 0.23% among others.

TABLE 4.1.9 Causes of Farm Accidents

Causes	Sokoto	Kano	Zamfara	Kebbi	Katsina	Total	%
Eviromental Conditions (such as rainstom, windstorm, sunrays, flooding, cloud, divisions. topography etc.	68	52	39	40	25	224	45.2
Terrain (road) factors (such as slippery ground or surface, pot holes, blind corners, inadequate road signs, poor drainage pattern etc.	38	29	40	19	20	146	29.4
Machine/vehicle factors (such as over loading beyond capacity, tyre burst, blown out rear wheel, weak and worn out fasterneners inadequate routine/periodic maintenance wornout threaded tyres etc.	10	11	8	6	5	40	8.1
Human factors (such as drugs, negligence. alcohols, sleeping, fatigue, cutting corners, hitting grazing animals, exceeding the machine operating limit. uncorrected load eye, wrong packing and signalling, poor visibility etc.(	24	18	6	21	3	72	14.5
Exposure to chemicals, explosives, and agrochemicals	5	6	-	2	1	14	2.8
Total	145	116	93	88	54	496	100

Table 4.1.9 above, Environmental factors are the major cause of farm accidents based on the states investigated in the north-west zone of this country (Nigeria) with about 45.2%. accidents as a result of terrain factors was about 29.4%, that of Human factors was 14.5%.

the vehicular factors was 8.1% while the least cause of farm accidents was found to be that as a result of using chemicals. Explosives, and other agro-allied chemicals.

TABLE 4.2 Age of Victims of Farm Accidents

Age of Victim (years)	Sokoto		Kano		Zamfara		Kebbi		Katsina	
	No	%	No	%	No	%	No	%	No	%
Under 20	75	30.74	60	39.00	29	30.53	42	38.88	20	41.67
21-30	93	38.11	65	37.0	36	37.90	44	40.74	22	45.82
31-40	65	26.64	46	21.16	26	27.37	20	18.52	5	10.43
Above 40	11	4.51	5	2.84	4	4.21	2	1.85	1	2.08
Total	244	100	176	100	95	100	108	100	48	100

Table 4.2 above, shows that the accidents victims within the age group of 21-30 years recorded the highest among all other age groups, this is simply because this age group is more engaged in farm activities than any other age group and this makes them more prone to accidents on the farm.

TABLE 4.2.1 Types of Farm Accidents

Types of accidents	Sokoto		Kano		Zamfara		Kebbi		Katsina	
	No	%	No	%	No	%	No	%	No	%
Tractor/equipment failure	-	-	3	1.31	1	9.92	-	-	-	-
Tractor/implement failure	-	-	3	1.31	-	-	1	0.83	4	4.44
Workshop tools and other field machinery	189	88.73	205	89.52	102	93.58	98	81.67	83	92.22
Environmental conditions	24	11.27	18	7.86	6	5.50	21	17.50	3	3.33
Total	213	100	229	100	109	100	120	100	90	100

Table 4.2.1 above shows that the major type of farm accident in relation to all the states visited was workshop as a result of using workshop tools and other field machinery followed by environmental conditions. Accidents due to tractor/equipment failure is the lowest type of accident that has ever occurred.

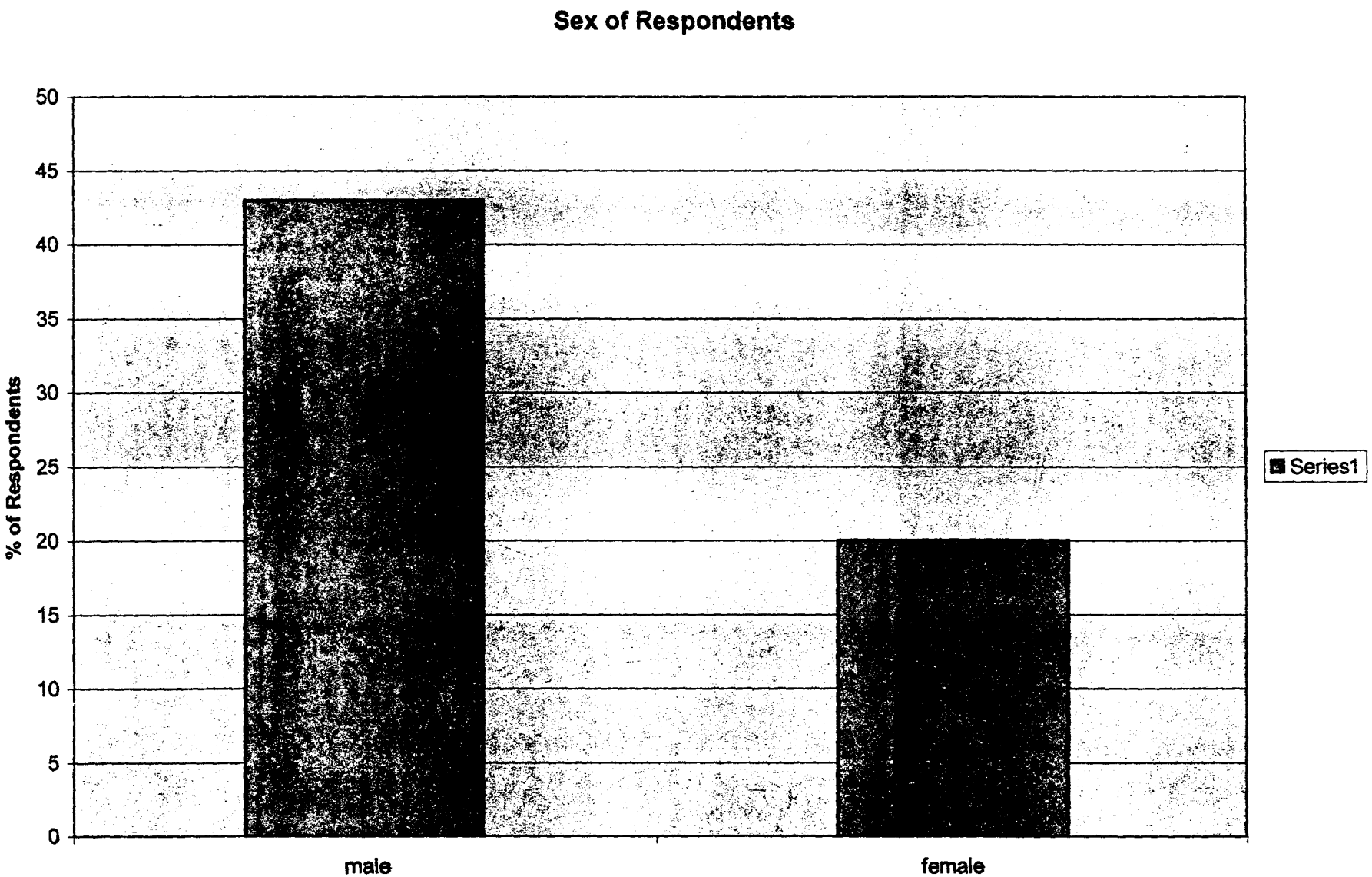


Fig. 2 chart showing Sex of respondents

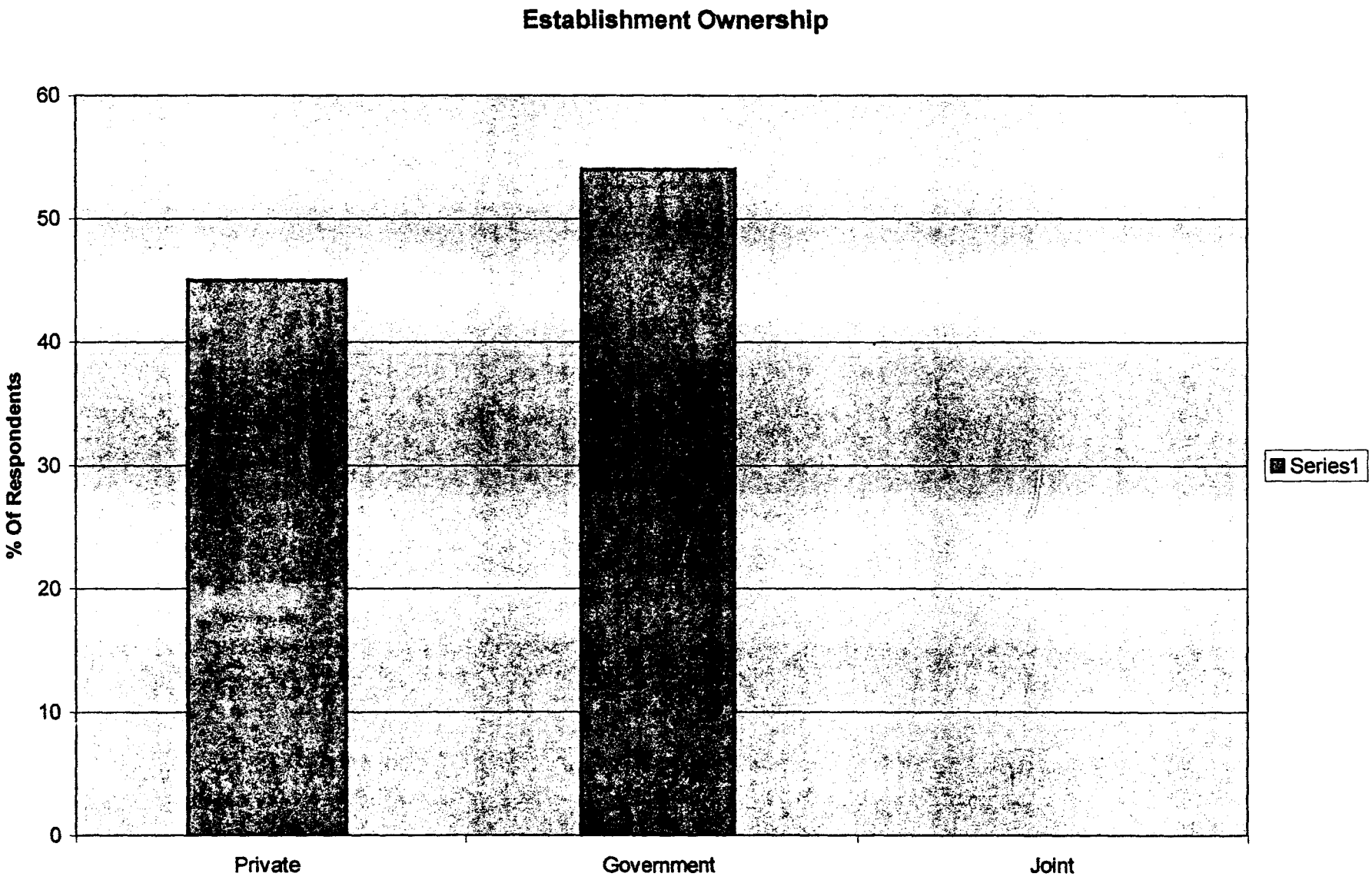


Fig.3 Chart Showing Establishment Ownership

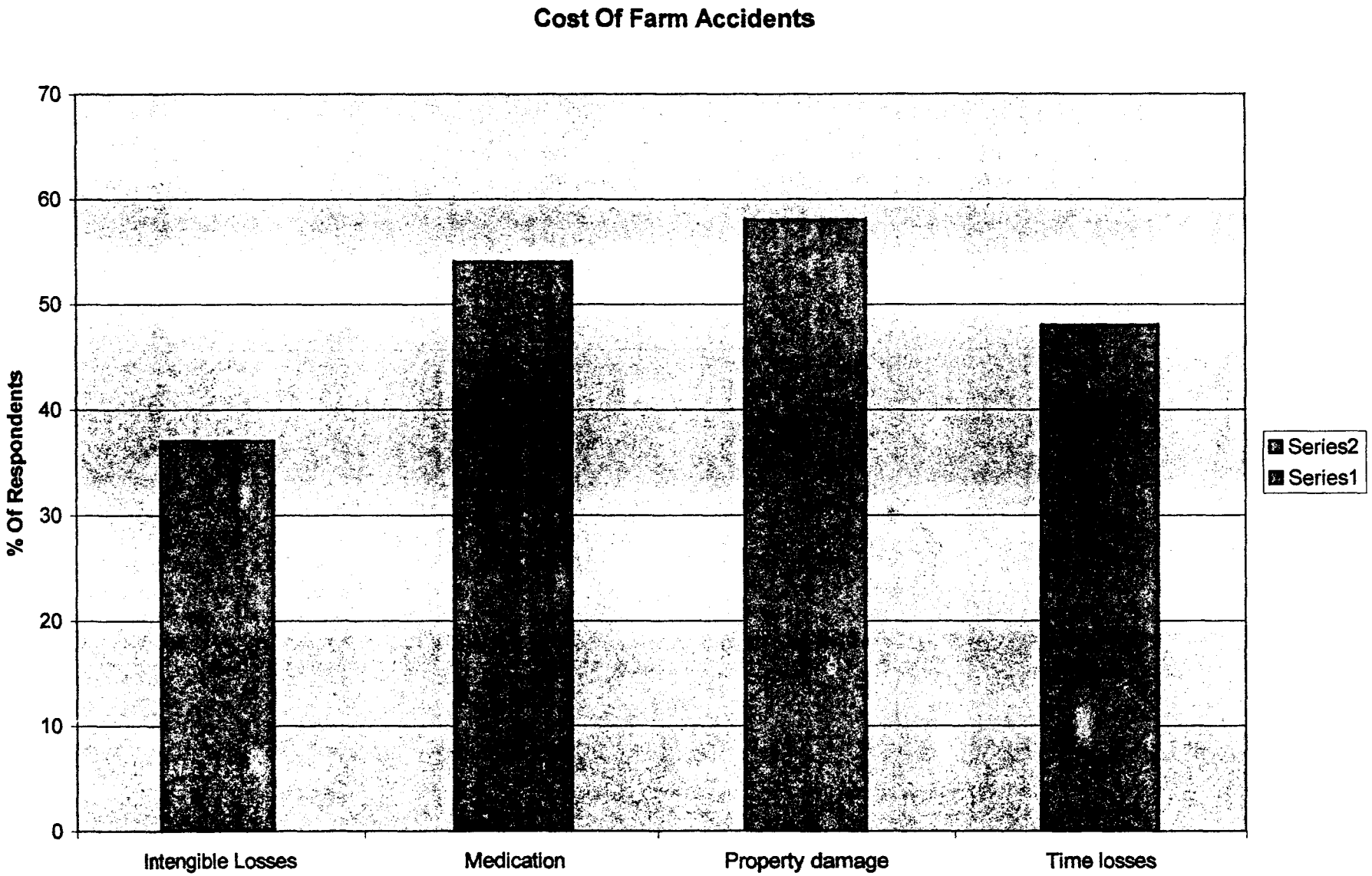


Fig. 4 Chart Showing the cost of Farm Accidents

TABLE 4.2.2 Comparative Analysis on the Causes of Farm Accident in Various States.

Causes	Sokoto		Kano		Zamfara		Kebbi		Katsina	
	No	%	No	%	No	%	No	%	No	%
Human factors	68	25.09	52	24.88	39	23.93	40	24.69	25	25.25
Environmental factors	24	8.86	18	8.61	6	3.68	21	12.96	3	3.03
Exceeding the limitation of the equipment	68	25.09	52	24.88	39	23.93	40	24.69	25	25.25
Terrain factors	38	14.02	29	13.87	40	24.54	19	11.73	20	20.20
Exposure to Chemicals	5	1.84	6	2.87	-	-	2	1.23	1	1.01
Mis-handling of equipment	-	-	-	-	-	-	-	-	-	-
Carelessness of operator	68	25.09	52	24.88	39	23.93	40	24.69	25	25.25
Total	271	100	209	100	163	100	162	100	99	100

Table 4.2.2 above. shows that the causes of accidents such as Human factors, exceeding the limitation of the equipment, carelessness of operator are rated the same because of the comparative analysis which would be made in Table 5.1.3. But from table 4.2.0, the

result shows that the causes of accident are Human factors, Environmental factors, Terrain factors, Machine/vehicle factors, Exposure to chemicals.

4.2 Case Study

Some memorable sad events that have occurred as related to farm accidents within the scope of study are given below:

Case 1: It was reported that while using a tractor hitched mower in an agricultural field in Sokoto Agricultural and Rural Development Authority (SARDA) in Sokoto state, the cutting blade of the mower forcefully disengaged and flew out of the casing, it was unfortunate that a farmer's leg who was standing only a few meters away became the cutting blade obstacle which of course cut the leg.

Case 2: Some farmers around the vicinity of Goronyo Irrigation water scheme in Sokoto state were reported drowned in 1996 during the dry season farming activities.

Case 3: About twelve (12) adults and children between 1990-1996 were reportedly drowned in Argungu in Kebbi State during fishing activities.

Case 4: A canoe was reported to have split in Yauri in Kebbi state and out of the 30 farmers on board only six (6) survived the accident. A case of flood was also reported to have raided a community in Ngaski Local Government Area of Kebbi State and about 200 people around at the farming communities lost their lives and property worth thousands of naira were also lost.

Case 5: Cases of snake and scorpion bites were rampant especially during harvest in some farming communities in Kano and Zamfara states.

Case 6: A case of fire disaster raiding stored farm produce in the barn and the farmer's shelter which were mainly made up of reeds, thrash and mud. This situation is often during the harmattan period of the year whereby farmers stay near fire or life coal

to keep themselves at nights and dawn warm, any act of neglect leads to fire outbreak, sometimes lives are lost or sustaining severe burns.

Case 7: In Alhaji Isiaka Rabiu's farm and Agricultural Development Project (ADP) all in Kano State. There were reports on farm fatalities whereby some operators among which two (2) were involved in ghastly motor accident with a truck loaded with fertilizer from Morris Mina to Kano ADP, one (1) involved in tractor overturn who on the spot died, three (3) got their hands entangled with some power driven machines which cut them off and one (1) sustained a permanent disability (paralysis) as a result of electric shock.

Case 8: There was a case of bees invasion on some farmers at work in Katsina and Zamfara states. Few of them died later as they became helpless while others were terribly hurt due to the stings.

Case 9: There was also a report of a tractor with poor trafficators and headlights, which collided with a DAF trailer along along Funtua – Faskari Local Government Area of Katsina State which led to the death of the tractor operator.

CHAPTER FIVE

5.0 COMPARATIVE ANALYSIS OF THE FOUR ZONES

This Chapter aims at comparing the various farm accidents in the four zones of this country (Nigeria). The zones include North-West zone, South-east zone, Middle belt zone and Western zone respectively. The investigative research would aid in knowing the nature, types, causes and costs of farm accidents as well as the consequences resulting from such accidents. Based on these findings possible measures would be proposed so as to avoid or reduce drastically the tragic events of farm accidents in Nigeria.

5.1 Comparative Analysis of Farm Accidents in North-west, South-east, Middle belt and Western zones of this Country (Nigeria).

From the analysis of the age of victims involved in one form of farm accident or the other as shown in table 5.1.0, the age group between 21-30 recorded the highest percentage of farm accidents. Therefore it implies that the age group is more engaged in farming activities than any other age group. This also constitute the labour force in Agricultural Industry. For the victims above 40 years of age, the cases of farm accidents was the least, meaning that the category of the age group is less involved in farming activities due to old age.

TABLE 5.1. Age of Victims of Farm Accidents in Various Zones

Age of Victm (Years)	Average		Average		Average		Average	
	No	% of North-west Zone	No	% of South-east Zone	No	% of Middle belt Zone	No	% of Western Zone
Under 20	226	35.19	2	3.34	10	13.73	-	-
21-30	260	39.92	24	44.98	21	55.70	-	-
31-40	162	21.82	27	51.59	18	25.57	-	-
Above – 40	23	3.08	-	-	3	5.00	-	-

From the analysis of the age of victims involved in one form of farm accident or the other as shown in table 5.1.0 above, the age group between 21-30 recorded the highest percentage of farm accidents. Therefore it implies that the age group is more engaged in farming activities than any other age group. This also constitute the labour force in Agricultural Industry. For the victims above 40 years of age, the cases of farm accidents was the least, meaning that the category of the age group is less involved in farming activities due to old age.

TABLE 5.1.1 Types of Farm Accident in Various Zones.

Types of Accident	No	Average % total of North-west Zone	No	Average % total of South-east Zone	No	Average % total of Middle belt Zone	No	Average % total of Western Zone
Tractor equipment failure	4	0.45	14	2.85	14	26.15	8	15.80
Tractor Implement failure	8	1.32	29	5.82	11	24.58	12	31.53
Workshop tools and other field machinery	677	89.14	243	48.52	1	1.68	2	7.70
Environ-mental conditions	72	9.09	163	32.56	20	36.15	23	36.40

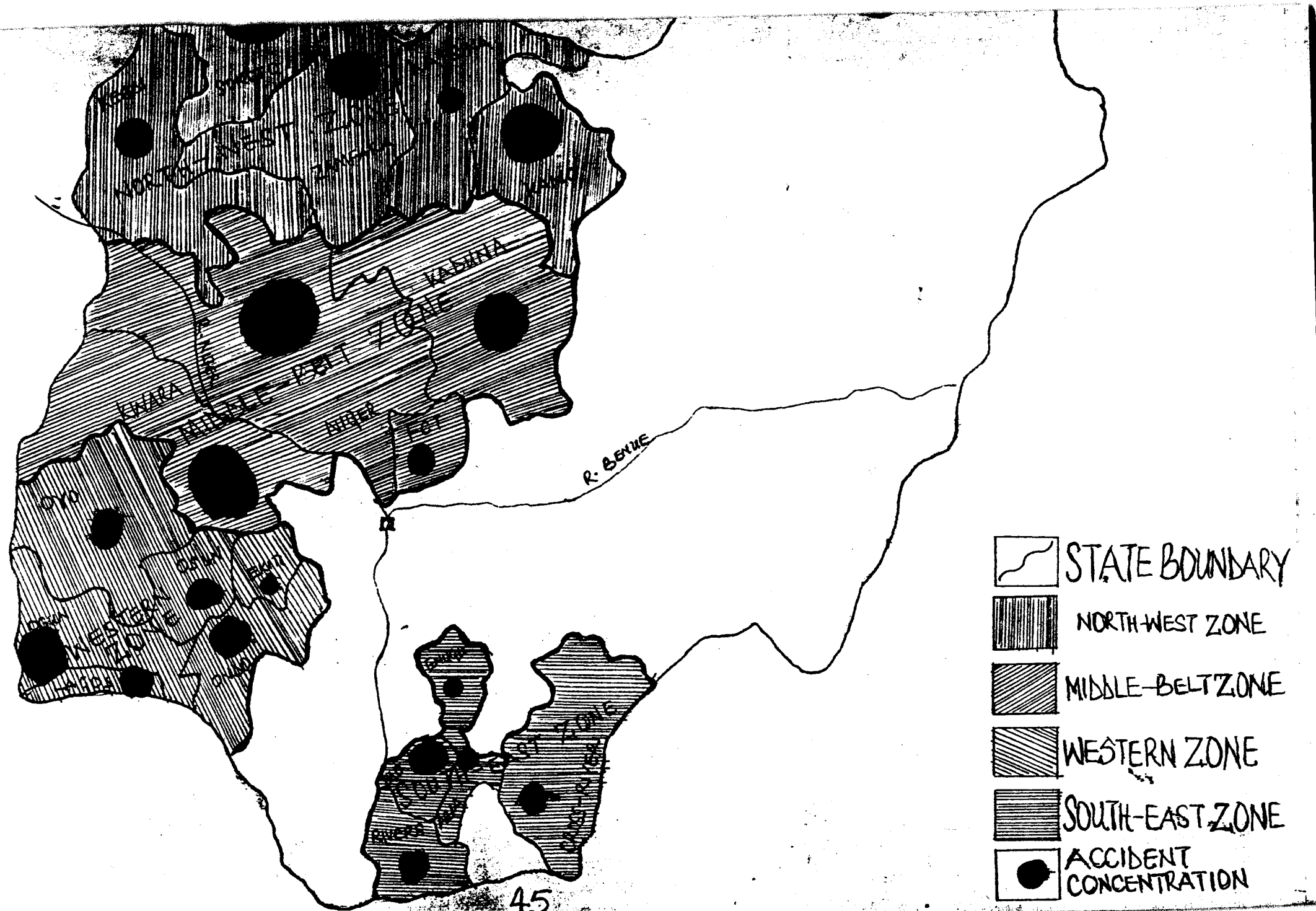
Table 5.1.1. above, shows that farm accidents resulting from the use of workshop tools and other field machinery was the highest with 89.14% in the north-west zone followed by 48.52% in the South-east zone, and the least is in the Middle belt with only 1.68%. Accidents due to environmental conditions was more in the western zone with 36.40%, followed by the middle belt zone with 36.15%, the north-west zone has the least with only 0.45%.

TABLE 5.1.2 Causes of Farm Accidents in Various Zones

Causes	No	Average % total of North-west Zone	No	Average % total of South-east Zone	No	Average % total of Middle belt Zone	No	Average % of Western Zone
Human factors	72	7.43	7	13.18	24	51.04	15	27.01
Carelessness of operator	224	24.77	23	43.27	12	16.18	10	11.53
Environ-mental factors	224	24.77	21	39.55	17	22.83	21	46.32
Exceeding the limitation of equipment	224	24.77	2	4.00	1	1.68	4	8.68
Terrain factors	146	16.87	-	-	-	-	-	-
Exposure to chemicals. explosives and agro-chemicals	14	1.39	-	-	-	-	-	-
Mis-handling of equipment	-	-	-	-	-	-	3	6.46

Table 5.1.2 above, could be observed that the causes of farm accidents due to human factors recorded highest in the middle belt zone with 51.04% and the least in the south-east zone with 13.18%. Farm accidents due to carelessness of the operator was rated highest in

Table 5.1.2 above, could be observed that the causes of farm accidents due to human factors recorded highest in the middle belt zone with 51.04% and the least in the south-east zone with 13.18%. Farm accidents due to carelessness of the operator was rated highest in the south-east zone with 43.27% and least in the middle belt zone with only about 16.18%. Consequently, the terrain factors. exceeding the limitation of the equipment and exposure to chemicals were observed to be the major causes of farm accidents in the north-west zone with 16.87%, 24.77% and 1.39% respectively.


KWARA
KADUNA
R. BENUE
OYO
OGUN
LAGOS
STATE BOUNDARY
NORTH-WEST ZONE
MIDDLE-BELT ZONE
WESTERN ZONE
SOUTH-EAST ZONE
ACCIDENT CONCENTRATION

For effective comparisons on the causes, nature, types, costs, extent of damages, establishment ownership, age of victims involved in accidents cases, season in which accidents are prone among others, as a result of farm accidents in the four zones which include north-west zone, south-east zone, middle belt zone and the western zone of this country (Nigeria).

The results based on the research studies made so far are being presented through the use of demographic variables in form of tables, bar charts and figures. From the research findings, most of the establishments were owned by the Government and few others by some private individuals, of course none was owned by Joint organization. Also, most of the respondents within the four zones were males and few others were females with percent total of 82% for males and 18% for females.

The majority of the accident victims within the four zones fall within the age group of 21-30 years of age. Hence, this age group constitutes the labour force, which are capable of engaging in more agricultural productivity than any other age group category within the country.

The studies also showed that there are more farm accident reported cases in the north-west zone of this country than other zones, this is owing to the fact that the north-west zone of Nigeria is more engaged in agricultural activities than any of the three zones mentioned earlier. This makes farm accidents prone in the northwest zone as compared to others.

The studies also showed that there are more farm accidents reported cases during the raining season than the dry season owing to the fact that there are more agricultural

activities during the raining season than the dry season or irrigation season especially in the north.

The major causes of farm accidents within the four zones mentioned above were as a result of environmental factors, which on the average was found to be 33.37%, followed by human factors 24.66%, exceeding the limitation of the equipment was found to be 9.78%, terrain factor though only north-west zone was considered was found to be 4.22%, the same zone was considered for the exposure to chemicals, explosive and other agro-chemicals and was found to constitute only about 0.35%, and in the case of mishandling of equipment only western zone was considered, it was found to constitute only about 1.62%.

The nature and types of farm accidents that is common to the four zones were accidents resulting from the use of workshop tools/field machinery, and a 36.76% was found to be on the average, for the environmental conditions 28.57% was found, and for the case of tractor/implement failure it was found to constitute about 15.81% while the least was tractor/equipment failure found to constitute only about 6.31%. Other types of farm accident though only considered in the northwest zones were as a result of fire, draught animals, fire, poisoning, tractor overturn, bees invasion, beasts etc.

However, the costs of farm accident in the four zones indicates that much is spent in refurbishing damaged properties followed by medication, then time losses and the least is on intangible losses.

The extent of damage done by both minor and major accidents has some devastating effect within the four zones as valuable resources such as farm structures, equipment, tools, machinery etc. becoming ruined as a result of mis-handling or fire

outbreak or even flood disasters. Also time is being lost before bringing back the ruined assets back to operating conditions, and much amount of money is being spent on medication of the casualties.

5.2 Extent of Damages as a Result of Farm-related Accidents.

"The compensation for any act of cinderella is a loss.

This implies that agricultural industry has suffered a great deal from the consequences of nonchalant attitudes on the part of some farmers or operators of any agricultural machinery. Though, sometimes nature also tends to take its course (unavoidable situations). In some other cases human misjudgment such as fixing an inexperienced personnel to pilot the affair of an important and sensitive unit of operation(s) within or outside the farming community could also be a major cause for farm accident.

In fact, over the years reports obtained on how farm accidents have continue to claim many lives or render such victims useless or unfit for any product on the farm. Therefore, farm accidents generally cause loss of valuable resources used on the farm such as assets or property owned or hired. These assets also include farm structures, equipment, tools, machinery or the assets or farm produce becoming ruined in the event of fire outbreak, flood or windstorm.

5.3 Cost of Farm Accidents

An estimate of about a quarter of a million to half a million (N250,000-N500,000) is being spent by government and private farm organisations on medication, rehabilitation, payment of injury benefits, installing or buying a replacement of the damaged farm machinery/equipment, workshop tools and implements. Furthermore, it is

difficult to quantify how much time a farmer/operator has wasted by staying off from performing his/her duties or putting the machine off from performing its operating functions as a result of farm accident. And this is a loss to the farm organisation because man-hour is been lost, so also many slight or intangible losses that are so numerous to mention are being lost through farm accidents.

For obvious reasons of all the 32 farms visited in the north-west zone mentioned previously, refused disclosing the precise amount on the costs of repairs, rehabilitation, medication, benefits to the injured party among other costings on farm-related accidents. Though with that only rough estimates were given to the researcher and it was on these basis analyses were based. Consequently, more attention is being given to the medication of the farmers/operators, followed by property damage then time losses and the least attention is given to intangible losses since they are slight.

Considering both Private and Governmental farm organisations, as they are equipped with agricultural machinery/tools and which are prone to accidents causation, some personnel though might have undergone some adequate training but whenever the unexpected "accident" happened such a victim may loose any part of his/her body that is endangered which may sometimes lead to death or permanent disability during the cause of performing his/her operating functions. As such the company or farm organisation is liable to compensate the victim or his/her family in the event of death. For fatal accidents resulting to such an uncalled for circumstances an estimate of about N700,000 is given or paid to the victim or his/her family, N10,000 for serious injuries and about N1,500 for slight/minor injuries as an act of compensation.

On the other hand, the governmental farm organisations do not adequately handle the issue of accidental death or injuries serious and in the case of fatal or severe injuries the organisation would only try to give some support to the victim by setting some of his/her hospital bill if all the he/she survives and in the event of death the family of the deceased would only be given little amount of money as an act of compensation.

In the case of rehabilitation of farm machinery/implements and farm structures as a result of accidents, large sum of money is allocated for repairs and maintenance of all existing or damaged farm machinery/implements, for instance the cost of refurbishing a dilapidated structure is not less than N500,000.00 or rehabilitating an accident vehicle, tractor or other heavy duty farm machinery are estimated at about N1,000,000.00 above. Though these amounts depend on the size of the farm (large or small).

CHAPTER SIX

6.0 CONCLUSION

It is true that agricultural mechanization has brought improved technology and high efficiency of agricultural productivity, but it should not be forgotten that the use of these strange mechanical beasts (machines) in carrying out agricultural operations has some limitations or set-back associated with them. These constitute a menace or threat in agricultural industry in Nigeria.

Perhaps, from the research study, which was aided through the distribution of some questionnaires and oral interview with farmers and operators of agricultural machinery. It was drawn that the majority of the respondents were males, the farm organisations with the highest frequency of accident occurance is the government owned farm organisations. Most of the victims involved in farm accidents fall within the age group of 21-30years of age which also have a mortality index of 4.3.

Hence, the major causes of farm accidents were due to environmental factors, human factors, terrain factors, vehicular or machine factors. The research study also revealed that the extent of damage of farm accidents were life losses, and property damage, the costs of farm accidents were on medication, time losses and rehabilitation of the damaged property.

The nature and types of farm accident were mostly due to the use of workshop tools and other field machinery, falls, drowning, fire, power driven machines, tractor overturn etc.

Comparative analysis of the four zones which include north-west, south-east, middle belt zone and western zones of Nigeria was made on the causes, nature, types, extent of damage, and costs of farm accidents.

Finally, some important suggestion on general safety in farming activities were given on how to prevent or minimize by making farming operations safe for farmers and operators of agricultural machinery.

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APPENDIX A

TABLE 5

Shows the number and types of farm accidents in the United States of America (USA) by both major and minor accidents for selected years.

S/N	Types of Accident	1943-1952 Average Number	1953-1965 Average Number	1966-1975 Average Number
1	Motor Vehicle	31,580	38,222	46,000
2	Falls	22,651	19,575	15,300
3	Drowning	6,651	6,483	8,000
4	Fire, burns and associated death	7,385	6,816	6,300
5	Poisoning by solids and liquids	1,715	1,538	4,100
6	Soffocation from injected objects	2,367	2,231	2,500
7	Poisoning by gases and vapour	1,832	1,211	1,600
Total		74,181	76,076	83,800

(Source: National Safety Council, accident facts USA 1976)

Accidents cost the United States of America (USA) billions of dollars each year. In 1975 these cost amounted to about $47.1 billion, model expenses of $6.2 billion, over head costs of insurance of $6.3 billion, property damage on motor vehicle accidents $8.0 billion, property loss of more than $4.2 billion inferes, and the indirect cost of work accidents and farm accidents inclusive amounting to about $7.0 billion.

APPENDIX B

TABLE 6

Work accidents: Deaths and injuries, 1975 (Death rate represent death per 10,000 workers).

Industry Group	Number of deaths	Death Rates	Disabling Injuries
Trade	1,200	6	380,000
Manufacturing	1,500	8	450,000
Service	1,800	9	420,000
Government	1,700	12	320,000
Transportation and Public Utilities	1,600	33	190,000
Agriculture	2,100	58	200,000
Construction	2,200	61	200,000
Mining, Quarrying	500	63	40,000
Total	12,600	250	2,200,000

(Source: National Safety Council, Accident facts USA (1976)

Comparisons between table 1 and table 2 above shows that fewer number of deaths were recorded at work accident than in any of the other standard accident categories. This is because the prevention of occupational accidents is highly organised in major companies thus, workers are less exposed to risk. From the above table, one could see clearly the effect of farm accidents. It ranks third in the number of deaths recorded with figure 2,100, the death rate amounting to 58 and a statistical figure of 200,000 disabling injuries.

APPENDIX C

TABLE 7 Cost elements of on-fatal reported accidents by accident type

S/N	Accident Type	Number of Accidents	Percentage of Resources Cost due to				Average Resource Cost
			Medical Cost	Damage Cost	Delay Cost	Delay Avoidance Cost	
1	Tractor Overturn	33	7	60	17	15	3120
2	Tractor P.T.O.	6	16	0	80	4	340
3	Other tractor	67	21	24	46	10	1110
4	Other self-propelled machine	43	13	17	49	22	1550
5	Field machine P.T.O.	7	13	0	65	22	670
6	Other field machine	181	19	1	65	15	890
7	Had tools	66	25	0	52	23	610
8	Stationery Machinery	61	21	0	59	19	860
9	Circular saws	29	26	0	64	11	840
10	Electrical	4	18	0	50	33	330
11	Falls	105	18	0	50	32	760
12	Bull/Boar/Others	22	30	0	39	31	1080

S/N	Accident Type	Number of Accidents	Percentage of Resources Cost due to				Average Resource Cost
			Medical Cost	Damage Cost	Delay Cost	Delay Avoidance Cost	
13	Other cattle	58	12	0	52	35	370
14	Poisoning	5	14	0	53	33	560
15	Falling/Swinging Objects	39	27	12	39	23	650
16	Strains/Wounds	37	12	1	60	28	300
17	Weil's disease	1	60	0	40	0	2370
18	Farmer's lung	5	40	0	43	17	1950
19	Other	22	34	2	45	19	610
	Overall	791	426	117	968	392	1897

(Source: Monk et al., 1984)

APPENDIX D

TABLE 8 Classification of Tractor Overturning Accidents According to Accident Cause

S/N	Category	Cause	Number	%
1	Tractor related (i.e. tractor limitations exceeded)	Stability loss (i)slope exceeds tip angle (ii) speed high (iii) ground rough control loss	 95 56 34 125	 17 10 6 22
2	Driver related	Driver's misjudgement	145	26
3	Miscellaneous	Varied causes but including traffic accidents and driverless tractors	105	19
	Total		560	100

(Source: Owen and Hunter, 1983)

In a survey of tractor overturning accidents, the main causes were attributed, firstly, to exceeding the tractor operating limits and either tipping over (stability loss) or sliding downhill (control loss) and secondly, to drivers misjudgement.

APPENDIX E

QUESTIONNAIRE

RESEARCH TITLE: INVESTIGATION OF FARM ACCIDENTS IN KANO, KATSINA, ZAMFARA, SOKOTO AND KEBBI STATE.

RESEARCHER: MOHAMMAD SADEEQ A.
DEPARTMENT OF AGRICULTURAL ENGINEERING
FEDERAL UNIVERSITY OF TECHNOLOGY,
MINNA, NIGER STATE.

Dear Respondents,

Large number of accidents occur daily on smal or large scale mechanized farms resulting in death, minor or severe injury and permanent disability, as a result of this valuable resources is lost to expenses on medical treatments, damaged property and of man hour through sickness.

In view of this, research studies were currently embarked upon so as to establish the causes, impact felt as a result of such accidents, by the recipients and to the nation's economy.

That is the core thesis why this questionnaire has been set up so as to establish a possible measure to remedy such uncalled circumstances which has a devastating effect on a substantial number of farmers, agricultural machinery and farm implements.

With all honour, I will appreciate every second of your time you spared in answering the following questions. Be rest assured that your response will be treated in confidence.

Your cooperation is highly appreciated.

SECTION A

Background information

Please circle the correct number that corresponds with your respect where applicable.

1. Geographical locations:_____

   Name of Establishment:_____

   Local Government Area:_____

   State:_____

2. Sex of respondent:

   Male 1 Female 2

3. Age of respondent:

   Under 20 years 1

   21 – 30 years 2

   31 – 40 years 3

   over 40 years 4

4. Age of person involved in the accident.

   Under 20 years 1

   21 – 30 years 2

   31 – 40 years 3

   over 40 years 4

5. Educational qualification of respondent

   Secondary school 1

   National Diploma 2

N.C.E. 3

Bachelor's Degree 4

Master's Degree 5

Ph.D 6

6. Status/Post of the respondent

Foreman 1

Technician 2

Supervisor 3

Engineer 4

Manager 5

7. Years of working experience of respondent

Less than one year 1

One to five years 2

/Six to ten years 3

Over ten years 4

8. Years of the person involved in the accident.

Less than one year 1

One to five years 2

Six to ten years 3

Over ten years 4

9. Number of victims in a particular accident_____

10. Number of tractors in the establishment_____

11. Number of other equipment/machinery_____

12. Types of available tractors in the establishment _____

13. Types of other equipment/machinery _____

14. Establishment ownership

Joint ownership 1

Private ownership 2

Government ownership 3

15. Major operations of the establishment _____

SECTION B

Description of Farm Accidents

1. Have the establishment recorded any case of accident?

Yes 1 No 2

2. If yes, in what form does it occur?

Tractor/equipment failure 1

Tractor/implement failure 2

Implement failure 3

Tools 4

Environmental condition 5

3. Who is involved in the accident?

Operator 1

Any other 2

4. Level of training of the handler of the equipment

Skilled 1

Unskilled 2

5. Where do such accidents occur?

Field Operations 1

Farm workshop 2

Farm stead 3

During transit 4

During transit down the slope 5

During transit up the slope 6

6. At what time of the season?

Rainy season 1

Dry season 2

7. In which part of the Tractor/equipment does failure frequently occur?

Linkage system 1

Wheels 2

Power Take-off (PTO) 3

Drawbar 4

8. Have you as an establishment attempted to minimize farm accidents/?

Yes 1 No 2

9. How does the establishment prevent/minize the occurrence of farm accidents?

Organising workshop/Lectures safety prevention 1

Giving orientation to newly employed workers 2

Indicating danger zones through symbol and signs 3

None of the above 4

10. How many cause of severe accidents have so far been recorded in the establishment?_____

11. When accidents occur, how are they handled?

Clinic/Hospital 1

First Aid Treatment 2

Send the victim home 3

12. What is the major cause of farm accidents in the establishment?

Negligence of the operator 1

Exceeding the limitation of the equipment 2

Human factor 3

Environmental factor 4

Mal-functioning of the equipment 5

13. In case of tractor/equipment accidents, does the tractor have a Roll Over protective structure (ROPS)?

Yes 1 No 2

14. In what way does the establishment suffers the cost of accident

Property damage 1

Time losses 2

Medical attention 3

15. Are there other accidents that do not involve equipment?

Yes 1 No 2

16. If yes in what form?

Electrical harzard 1

Mechanical 2

Chemical 3

Fire 4

Snake bite 5

17. What is the frequency of occurrence of accidents?

Less than 2 times per year 1

3-6 times per year 2

7-10 times per year 3

Over 10 times per year 4

18. What is the extent of damage caused by minor accident?

Time losses 1

Slight damage 2

Property damage 3

Medical attention 4

19. What is the cost of repairs or refurbishing the tractor/equipment?_____

20. How long does it take the establishment to repair the tractor/equipment?

Within weeks 1

Within months 2

Years 3

21. Are the Tractors/equipment given off season maintenance?

Yes 1 No 2

22. Are the Tractors/equipment kept outdoors or in shade during off working hours?__

_____

23. Do the establishment have disable people as a result of farm accidents?

Yes 1 No 2

24. If yes, how are they catered for

Monthly allowance 1

Compulsory retirement 2

25. What suggestions can you offer so as to reduce farm accidents to the bearest minimum_____

26 State any other comments as appropriate.