

# SURVEYS ON DIFFERENT TYPES OF MECHANIZED FARM ACCIDENTS EXPERIENCED BY TRACTOR OPERATORS IN NASARAWA STATE, NIGERIA.



BY

#### \*J.Kuje Yohanna, U.A. Fulani, M. B. Ibrahim and H.K. Ali

Department of Agricultural Engineering College of Agriculture, PMB 33, Lafia, Nasarawa state \*Corresponding Author's email address: engrkuje@yahoo.com; drkuje@gmail.com

# ABSTRACT

This paper investigated the different types of mechanized farm accidents experienced by operators of tractors and its implements in Nasarawa state, Nigeria. A total of 140 tractor operators were randomly sampled from the federal and state government agricultural establishments/parastatals, federal and state educational institutions, local government councils as well as privately owned agricultural farms involved in agricultural mechanization in Nasarawa State but 115 respondents representing 82% were retrieved for analysis. The survey involved the use of questionnaire and personal communication during field trips. The questionnaire elicited information such as personal profile of operators, inventory of farm tractors and implements, causes and factors responsible for the accidents in the field of operation of tractors and implements and types of accidents experienced by operators in the use of tractors and implements. The data were analyzed using simple descriptive statistics. The different types of accidents experienced by tractor operators in Nasarawa state were identified and classified as accidents due to mechanical failure in machine 96.5%, accident due to lack of training and technical knowhow 68.7%, environmental and operational hazards 91.3% and lack of safety consciousness and awareness 91.3%. Corrective measures towards prevention of such accidents were also presented in this work. It is recommended among other things that tractor operators should be trained and retrained in the area of operation and to prevent or minimize accidents, daily and periodic preventive maintenance of tractors and implements should he carried out regularly.

Keywords: Mechanized farm Accidents, Tractors, Implements, Operators, Nasarawa State, Nigeria.

#### **INTRODUCTION**

Mechanization, which involves the application of machines, processes and systems to agricultural production, has been one of the most outstanding developments in agriculture. Machinery on the other hand, contributes a major capital input costs in most farm enterprises (Sogaard and Sorensen, 1996). Agricultural mechanization may be interpreted in several ways; to some, it is synanouymous with tractorization, while others take it to imply increase in production per worker and per hectare of land cultivated (Kutte and Tya, 2001). A successful farmer strives to make judicious use of agricultural inputs and farm equipment in order to maximize production with minimum cost. Farm equipment acts as a device to ensure that other inputs give the desired results. Thus, it may be said that farm equipment and the techniques associated with its use broadly constitute the field of agricultural mechanization. It encompasses the use of farm equipment including the power sources that are used to operate the various machines (Kaul and Egbo, 1992).

Odigboh and Onwualu (1994) reported that the machines used for agricultural production in Nigeria include hand tools, animal draught implements, two- wheeled and four-wheeled driven tractors, motorized or mechanically driven post harvest handling and processing, crop storage equipment and pumps for irrigation. Thus, agricultural mechanization in Nigeria can be classified into three level of technology: hand tool technology, draught-animal technology and engine-powered technology. Engine-powered technology is the highest and most modern level of agricultural mechanization. It refers to a very wide range of implement, machines and equipment powered by a similarly wide range of mobile or stationary power sources, engines and motors, using petroleum fuels and electricity.

Farm accident is anything unpleasant or damaging, which happens unexpectedly or by chance that result into injury, loss of life, property damaged and time loss as a result of operating farm machinery (Yisa 2001, Adamade 2007, Yohanna, 2006& 2007). Yohanna (2012) further stated that farm accident can be referred to as all incidental occurrences related to agricultural activities such as snake bite, bee invasion, fire outbreak, chemical explosion on the farm or workshop, land communal crisis resulting to agricultural land resource damage.

In recent times, accidents occurring in the farm have been a major concern to farmers and researchers in the developed countries of the world (Yisa 2001, Atanda 2005 & Yohanna 2012). It is also noted that there are more accident deaths on agriculture than in any other major industry and farm mechanization activities are the sources of the majority of accident in farming (Jain & Rai 1992). Technological advances have greatly reduced man's physical burdens through the use of machines, but man's mental work has been increased. The person who operates modern farm equipment must make many decisions and perform many functions to ensure that the machines perform properly. The demand for more decisions may result in mistakes that lead to serious accidents (Kepner et al., 1980). Large proportion of the victims of accidents in the field of operation is young people's representing a great loss to the nation at large. Lack of safety consciousness and awareness, lack of training and education, ecological and environmental conditions, lack of inadequate maintenance of tractors and implements were identified as causes and factors responsible for accidents of operators of tractors and implements ( Atanda 2004 & Manuwa 2002 & 2006 ). In a typical Nigeria farm, a wide range of accidents result due to poor state of infrastructures supporting mechanized farming and the absence of requisite skills in some instances. These give rise to the need to survey the types of farm accidents and their prevention during farming operations (Yohanna, 2012).

The objectives of this study include:

i) To assess and classify different types of farm accidents experienced by operators of farm tractors in Nasarawa state,

ii) To determine the various reasons responsible for such cases of farm accidents and

iii) To recommend some corrective measures to be taken to prevent or minimize farm accidents in Nasarawa state.

### Materials and Methods Description of the study Area:

The Nasarawa state of Nigeria lies between latitude 8.5<sup>o</sup>N and longitude 8.3<sup>o</sup> E. The state is bounded in the North by Kaduna State, in the East by Plateau and Taraba States, in the West by Abuja, Federal capital Territory and in the South by Benue and Kogi States. Nasarawa State has an area of 27, 117km<sup>2</sup>, According to 2006 census, the state has a population of about 2 million inhabitants. The State is blessed with abundant solid minerals resources coupled with a resourceful, industrious and hospitable people (Wikipedia, 2007). The climate of the State is tropical with two distinct seasons: the rainy and the dry seasons. The temperature throughout the year ranges from  $21^{\circ}$  c to  $37^{\circ}$  c while humidity is relatively high. The annual total rainfall varies from 1100 to 1600mm. The State generally enjoys luxuriant vegetation. Nasarawa State is a predominantly an agrarian State. Agriculture has always played a leading role in peoples' lives as most people in the State engage in farming. The geographical location of the state makes it a veritable agricultural zone for the cultivation of diverse crops. The predominantly grown crops include maize (zea mays), yam (Discorea species), cassava (manihot species), rice (oryza sativa), groundnut (Arachis hypogaea), millet (pennisetum typhoides), melon (citrullus spp), Guines corn (sorghum bicolor), Beniseed (sesamum indicum); tree crops: oil palms (Elaeis guineesnsis) and citrus: sweet orange (citrus

sinesis), pawpaw (carica papaya), cashew (Anacardium accidentale).

#### **Data Collection and Analysis**

The study was conducted in majority of the government agricultural establishments and privately owned agricultural farms in Nasarawa State. Personal communication during field visits and the use of questionnaires were employed in gathering information. A total number of one hundred and forty (140) tractor operators were randomly sampled for the study but one hundred and fifteen (115) respondents representing 82% were retrieved for analysis. The questionnaires sought information among other vital things like the personal profile of operators, inventory of farm machinery, causes of factors responsible for accidents in the field of operation of tractors and implements, and types of accidents experienced by operators in the use of farm machinery.

The information obtained from the completed questionnaires was compiled and analyzed using descriptive statistics. Based on the data collected each respondent had 3 to 4 types of accidents in the operational career. In order to ensure that information gathered were true representation of what was obtained in the surveyed locations, some oral interview was done to those not well educated as well as explanation of the questions was given in the local language that they can understand. There was no attempt made in the cost of each accident in monetary terms.

#### **Results and Discussion**

A total number of forty five (45) establishments responded to the questionnaire as classified and presented in Table 1.The results obtained from the surveys are presented in Tables 2 and 3. The major findings of the survey have been classified under the following sub-headings: Accidents due to mechanical failure in machine, accidents due to lack of training and technical knowhow, accidents resulting from environmental and operational hazards and accidents due to lack of consciousness and awareness. safety Maintenance is the backbone of any technical service delivery (Ojha and Michael 2003 & 2011). It has been observed that the main cause of early failure in farm tractors is the lack of adoption of preventive maintenance practice. This leads to frequent tractors breakdown and high operating costs. The benefits of regular preventive maintenance are that the time loss due to machine breakdown is minimized or eliminated, maintenance costs are cheaper than replacement, maximum output and prolonged life span of the machine are guaranteed and also injury due to accidents is prevented.

\*Accidents due to mechanical failures in machines. 96.5% of the respondents experienced brake failure in their tractor. Brake failure is a common cause of this accident due to mechanical fault. Managers of farm machinery often at time persuade their operators to operate with a faulty brake, hence no time to repair due to shortage of funds to buy spare part or replace the entire faulty brake. 93% of the respondents experienced hydraulic lift failure while moving on the high ways with implement attached. Vehicles coming at the back of such tractors usually collide with dropped implement causing serious mishap.

\*Accidents due to lack of Training and Technical known how of the operators 68.7% of the respondents experienced fall from the tractor. Allowing extra-riders and tractor mates to sit near the operator on the tractor during haulage or while carrying out a particular operation is the source of this type of accident. Also quick turning, negotiation of sharp bends or sudden application of brakes in motion leads to fall of extra rider. 34.8% of the respondents experienced crushing of their mates, legs. Operator's hand may mistakenly hit the position control lever leading to implement dropping on badly positioned legs of mate. 79.1% experienced trailer detaching and facing off from the tractor drawbar hitch point. This occurs as a result of poorly hitched trailer or any other equipment to the tractor drawbar hitch point. 95.7% experienced damaged to their tillage implements during operation. Excessive operational speeds during tillage operation by operators to beat hiring time and carrying out their personal businesses and even working in the night using headlights often leads to cases of plough disc or harrow disc pulling out of the hub, when it hits hard rock (pans), stubborn stumps etc. during operation. 53% also experienced crushing between tractors and implement. During coupling of implement to the tractor the tractor mate assigned to carry out this function is unknowingly crushed in error, if the operator mistakenly moves the tractor a little distance due to lack of 39.1% of the respondents concentration.

experienced tractor dragging forward and hitting obstacles like trees, building fence, workshop gate etc, improper starting of the tractor engine especially on a slopy land is the major cause of this accident.

\*Accidents resulting from environmental and operational hazards. 91.3% of the respondents experienced snakes, bees and often harmful insects attack while moving inside the bush for operation. At times, unnoticed bees colony from nearby trees or warps sting the operators and mates leading to pains or state of comma. Some operators walking without covered shoes (boot) on a freshly ploughed land exposed themselves to a lot of snake bites. 93% experienced deep cut on their heads, neck etc from branched thorns, pointed sticks, shrubs and over hanging trees while moving their machine inside the bush for operation. Also during operation accidental falling of dry sticks, overhanging trees and branches on the operators head often resulted. 2.6% of the respondents claimed to have experienced and survived accident due to tractor over turning. This is a major fatal accident that can lead to the death of operator when tractors are used in area of bad topography. Another source of this type of accident is when the tractors are operated with the weight at the front end not balanced or is light.

\*Accidents due to lack of safety consciousness and awareness by operators: 91.3% of the respondents experienced hot water scalding on their faces. This type of accident arises from sudden opening of an over-heated radiator cap while the system is hot during operation. 52.2% of the respondents experienced dangerous turning due to lack of safety consciousness leading to head on collision with an on-coming vehicle on the highways. 82.6% of the respondents experienced their tractor rolling backwards. This type of accident occurred when the tractor was unable to clamp a slope. 56.5% of the respondents experienced head on collision with an on-coming vehicle. This was due to uncontrollable braking, characterized by high speed which may even upset the tractor at times. This could leads to overturning, if not brought under control. 49.6% of the respondents experienced pushing and uncontrollable movement of the tractor. This type of accident occurred while going downhill with a heavy load attached and shifting the gear to

neutral position. 53% of the respondents also dropping experienced accidental of the implements in the highways. This can be attributed to operators' carelessness by allowing extra rider, who mistakenly touch and unlock the hydraulic system while carrying the implement on the highways. 76.2% experienced sliding on the tractor steps or platform after a typical maintenance and repair practice. This may occurred when the tractor steps or platforms were not free from oil and grease as stated by Atanda (2005). Table 3 shows other relevant information such as age of operators, years of experience, educational status of operators and training undergone by operators as they affect or influence accidents in Nasarawa State. 57.4% of the accidents victims were aged between 40 and above which may be due to years and psychological weakness from age, tireless farming and 40.9% of the victims were aged between 15 and 29 years. This may be from lack of safety consciousness and careless in handling of farm tractors and tools by young aged operators as stated in Yohanna (2012). The 1.7% of accident victims was aged between 30 and 39 years. The low percentage here indicates that this aged group of operators is self conscience of accidents while operating on the farms. 60.9% of the operators have years of experience between 5-10years. This indicates that most of them are inexperienced. Most of them were motor vehicle drivers being converted to Tractor operators leading to inadequate experience. This will take them some time to learn on the job of operating the tractor and the implement on the farm for any efficient performance. There was lack of training of operators due to low level of education attained as81.7% of operators have only first school leaving certificate while the remaining 18.3% have the highest qualification of senior secondary certificate (SSCE) National school or examination council (NECO). This problem affects most of the tractor operators. Skills, knowledge and attitude must be developed and inculcated on regular basis; so that the capacity of the operators does not fall behind requirements. Regular assessment of the competitive level of the operators to perform the tasks involved in making effective use of equipment would bring to the fore gaps that need to be bridged through training. There is also need for quality education

in the tertiary institutions so that adequate manpower is developed for the replacement of those who are aged 40 and above and exiting employment of operators.

#### **Conclusion and Recommendations**

The study has conducted investigative surveys into different types of farm accidents experienced by tractor operators in Nasarawa State. The study revealed that tractor operation with different machines/implements and requires special knowledge, skills and training /technical know how to avoid breakdown and accidents. Lack of training and retraining of operators were identified as a key problem constituting different types of accidents in the state. If the suggested corrective measures are followed, cases of incessant accidents will be drastically reduced or prevented in mechanized agricultural farms.

In order to minimize or reduce farm accidents, it is recommended that:

i) Tractors should be handled by well trained operators who have adequate knowledge and skills in tractor operation and maintenance in order to minimize frequency of breakdown and accidents.

ii) There should be adequate training and retraining of tractor operators and mechanics/technicians at the relevant training institutions such as Agricultural manufacturers and machinery operator's training centre **REFERENCES** 

- Adamade, C.A (2007). Causes, impacts and prevention of farm accidents on mechanized farms. Proceedings of Nigerian Institution of Agricultural Engineers, Yola. Vol. 29:14-16.
- Atanda, E.O (2004). Farm tractors and implements of accidents in the field of operation in Ondo State: Causes and remedies. J. Science, Engineering and Technology,vol.11: 681-691.

Atanda, E.O (2005). Investigation into different types of accidents experienced by farm tractor operators in Ondo State, Nigeria. Proceedings of the 6<sup>th</sup> International conference of the Nigerian Institution of Agic Engineers. Yenagoa, vol 27: 87-94.

Jain, S.C and Rai, C.R. (1992) Farm tractors

(AMMOTRAC), Akure or Bauchi for more efficient performance on the job.

iii) Managers of farm machinery should have adequate budgetary allocation to maintenance and stocking of spare parts and necessary apparels for operators during field operation.

IV) A particular operator should be attached to a particular tractor to safeguard against accident, and the operators should be well supervised and make sure they followed the service manuals at all times.

v) Record keeping of spare parts, use of lubricants, fuels, hours of work, and operator in charge should be carried out regularly. This will help the managers or owner of such machines to know when the efficiency and the rate of operation of the machine start to drop.

The recommendations from this study will also take care of the present and future increase in the operation, maintenance and repair of farm tractors and implements in Nasarawa State.

#### Acknowledgements.

The authors are very grateful to all the respondents from the various establishments in Nasarawa State for making themselves willingly available for interview and data collection. The authors are highly appreciative of their understanding and cooperation rendered in the course of this study.

maintenance and repairs. Tata McGraw-Hill publishing, Co. Ltd. New Delhi.102pp.

Kaul, R.N. and C.O. Egbo (1992).

Introduction to Agricultural mechanization. Macmillan Press, Ltd. London. 194pp.

Kepner, R.A., Bainer, R and Barger, E.L. (1980). Principles of farm machinery. 3<sup>rd</sup> edition. Avi publishing company Inc. Westport, U.S.A. 152pp.

Kutte, M.T. and Tya T.S.K (2001).

Mechanization strategies for sustainable agricultural production in Nigeria. Proceedings of International Conference of Nigerian Institution of Agricultural Engineers, Enugu-Nigeria. Vol. 23:27-33

Odigboh, E.U. and Onwualu, A.P (1994).

Mechanization of agriculture in Nigeria. A critical appraisal. *Journal of Agricultural Technology*. 2(2): 1-37.

- Ojha, T.P.and A.M. Michael (2003). Principles of agricultural engineering, vol.1.Fourth edition. Jain Brothers, New Delhi. 902pp.
- Ojha, T.P.and A.M. Michael (2011). Principles of agricultural engineering, vol.1.Fifth edition. Jain Brothers, New
- Delhi. 910pp. Manuwa, S.I (2002). Development of equipment for soil tillage dynamics and evaluation of tillage parameters. Unpublished PhD thesis in the dept of agric engineering. The Federal University, Akure.
- Manuwa, S.I (2006). Determination of the coefficient soil materials friction for selected materials. Proceedings of Nigerian institution of agric engineers, Zaria, vol 28: 33-37.
- Sogaard, H.T. and Sorensen, C.G. (1996). A model for Optimal Selection of machinery sizes within the farm machinery system. Proceedings of 6<sup>th</sup> Int. conference in Computers in Agriculture. Cancum Mexico. Pp 588-596.
- Wikipedia (2007). The free Encyclopedia, Wikimedia Foundation, Inc. USA.
- Yisa, M.G. (1996). Dynamics of Tractor-Implements combinations in slopes. Unpublished Ph.D Thesis. Graduate school of Agriculture, Hokkaido
- University, Sapporo- Japan. Vol. 67 pp 3-30. Yisa, M.G. (2001). Investigation of farm
- accidents in Nigeria PART 1. FCT, Kaduna, Kwara and Niger States. Journal of Agricultural Engineering and Technology. Vol. 9:46-52.
- Yohanna, J.K. (2006). An appraisal of farm power and equipment operation and management in Nasarawa State of Nigeria. *Journal of Engineering Science and Technology*, Vol. 1 (1): 58-61
- Yohanna, J.K. (2007). Farm machinery utilization for sustainable agricultural production in Nasarawa State of Nigeria. *Journal of Food and Agricultural Research*, Vol. (1&2): 192-199.

## Yohanna, J.K. (2012). Impact assessment of

the causes and prevention of farm accidents on mechanized farms of North Central Zone/States of Nigeria. *Asian Journal of Agriculture and Rural Development*. Vol. 2(2): 155-161

| Establishments classification   | Names of Establishments and their location                    |  |  |
|---------------------------------|---|--|--|
| Federal Government Agricultural | +Federal ministry of Agriculture and Rural Development Lafia. |  |  |
| Establishments                  | +Lower Benue River Basin Development Authority, Dep- Proje    |  |  |
|                                 | Sabon Gida.   |  |  |
|                                 | +Lower Benue River Basin Development Authority, Doma.         |  |  |
|                                 | +National Directorate of Employment, Lafia.                   |  |  |
| State Government Agricultural   | +Ministry of Agriculture and water Resources, Lafia           |  |  |
| Establishments                  | +Nasarawa Agricultural Development programme, Lafia           |  |  |
|                                 | +Badakushi Agricultural Programme, Lafia                      |  |  |
|                                 | +Fadama III project, Lafia                                    |  |  |
|                                 | +Farm mechanization Agency, Lafia                             |  |  |
| Local Government Councils       | +Akwanga Local Government Council, Akwanga                    |  |  |
| Headquarters (Agricultural      | +Awe Local Government Council, Awe                            |  |  |
| Departments)                    | +Doma Local Government Council, Doma                          |  |  |
| 1 /                             | +Karu Local Government Council, karu                          |  |  |
|                                 | +Keana Local Government Council, keana                        |  |  |
|                                 | +Keffi Local Government Council, keffi                        |  |  |
|                                 | +Kokona Local Government Council, Garagu                      |  |  |
|                                 | +Lafia Local Government Council, Lafia                        |  |  |
|                                 | +Nasarawa Local Government Council, Nasarawa                  |  |  |
|                                 | +Nasarawa Eggon Local Government Council, Nasarawa Eggon      |  |  |
|                                 | +Obi Local Government Council, Obi                            |  |  |
|                                 | +Toto Local Government Council, Toto                          |  |  |
|                                 | +Wamba Local Government Council, Wamba                        |  |  |
| Privately Owned Agricultural    | +Oriya Farms Ltd. Doma  |  |  |
| Farms                           | +Olams Farms, Rukubi -Doma                                    |  |  |
|                                 | +Johanz Farms, Azaba- Lafia                                   |  |  |
|                                 | +Babayaro Farms, Lafia  |  |  |
|                                 | +Salri Farms, Nasarawa  |  |  |
|                                 | +Layuza Farms, Nasarawa                                       |  |  |
|                                 | +Marhada Hatal Farms, Nasarawa                                |  |  |
|                                 | +Nagari Farms Ltd., keffi                                     |  |  |
|                                 | +Sharna Farms, keffi  |  |  |
|                                 | +Lumo Farms, keffi  |  |  |
|                                 | +Alarama Farms, keffi   |  |  |
|                                 | +Amfani Farms, keffi  |  |  |
|                                 | +Chiroma Farms, keffi   |  |  |
|                                 | +Gudunma Farms, keffi   |  |  |
|                                 | +Gyunka Farms, keffi  |  |  |

# Table 1.Classification of Establishments that Responded to the Questionnaires

Source: Field survey, 2013.

| S/N | Classification<br>Of Accidents  | Types of<br>Accidents  | No of<br>Response | Percentage (%) | Suggested corrective measures   |
|-----|---|--|-------------------|----------------|---|
| 1.  | Accidents due to<br>mechanical failure in<br>machine                    | Brake failure in tractor   | 111               | 96.5           | There should be regular periodic<br>maintenance. Managers should stock brake<br>spare parts at all times. Faulty brakes should<br>be replaced immediately.  |
|     |   | Implement hydraulic<br>lift failure  | 107               | 93             | Regular maintenance is vital. Essential<br>hydraulic lift spare parts should be in store<br>for easy replacement. All hydraulic<br>connections should be tightened, serviced or<br>replaced if worn out.  |
| 2.  | Accidents due to lack<br>of training and<br>technical know how          | Fall from the tractor  | 79                | 68.7           | Tractors are not designed for carrying<br>passengers. It is designed for only a person –<br>the operator and the trailer for load, so<br>allowing extra riders is calling for accidents.<br>Always follow the "no passenger" rule.                |
|     |   | Crushing of the tractor operators' mate legs                                     | 40                | 34.8           | Operators and mates are not advised to work<br>under an implement in raised position.<br>Putting legs under implement coupling<br>should be avoided.  |
|     |   | Trailer detaching and<br>falling off from the<br>tractor draw-bar hitch<br>point | 91                | 79.1           | Always attach the trailer to the regular hitch<br>point provided. Any attempt to attach the<br>load through a chain or rope to the rear axle,<br>top link or lower links will overturn the<br>tractor.  |
|     |   | Damage to<br>implements during<br>tillage operations                             | 110               | 95.7           | Operators should control speed at all times<br>when carrying out ploughing and harrowing.   |
|     |   | Crushing between tractor and implement   | 61                | 53             | Operators should exercise restraints and be<br>safety minded during coupling of<br>implements   |
|     |   | Tractor dragging<br>forward and hitting<br>obstacles like trees,<br>building etc | 45                | 39.1           | Operators should sit on the tractor seat while starting the tractor engine  |
| 3.  | Accidents resulting<br>from environmental<br>and operational<br>hazards | Snakes, bees and other harmful insects bites                                     | 105               | 91.3           | Operators and mates should wear coveralls,<br>boats (shoes) with thick soles to prevent<br>penetration by sharp objects. Goggles and<br>caps must be worn by operators and mates.   |
|     |   | Hitting of the<br>operators head and<br>neck with branched<br>sticks, shrubs etc | 107               | 93             | Provision of apparels and cabinet on the tractor should be provided   |
|     |   | Tractor over-turning   | 3                 | 2.6            | Operators should walk round (survey) the<br>field to check for large ditches, swampy<br>lands and rocky/hilly areas before operation.<br>Provision of extra weight in front of the<br>tractor to avoid over turning when using<br>heavy implement |
| 4.  | Accidents due to lack<br>of safety<br>consciousness and<br>awareness    | Hot water scalding   | 105               | 91.3           | Always allow the radiator to cool down<br>before gradual opening of the radiator cap<br>with a rag in the hand.   |
|     |   | Dangerous turning  | 60                | 52.2           | Always keep both brakes adjusted and interlock them while travelling on the highways.   |

# Table 2. Classification and types of farm accidents experienced by tractor operators in Nasarawa State.

| Head on collision6556.5Follow the recommended safe speed and try<br>to avoid tractor bouncing.Pushing<br>uncontrollable<br>movement<br>of<br>tractor<br>Accidental<br>of implement on the<br>high ways5749.6Never disengage the clutch and put the gear<br>in neutral position when going downhill.Sliding on the tractor<br>steps or platforms<br>after maintenance and<br>renains6153Lock the hydraulic system while moving<br>implement on the high ways | Tractor rolling backward   | 95 | 82.6 | Be safety conscious at all times. Engage a low reverse gear slowly.   |
|---|--|----|------|---|
| Pushing<br>uncontrollable<br>movement<br>of<br>tractorand<br>575749.6Never disengage the clutch and put the gear<br>in neutral position when going downhill.Accidental<br>of<br>implement on the<br>high ways6153Lock the hydraulic system while moving<br>implement on the high ways.Sliding on the tractor<br>steps8876.5Always keep tractor steps or plat forms clean<br>and free from oil or grease after maintenance<br>or repairs.                    | Head on collision  | 65 | 56.5 | Follow the recommended safe speed and try to avoid tractor bouncing.  |
| Accidental dropping<br>of implement on the<br>high ways6153Lock the hydraulic system while moving<br>implement on the high ways.Sliding on the tractor<br>steps or platforms<br>after maintenance and<br>repairs8876.5Always keep tractor steps or plat forms clean<br>and free from oil or grease after maintenance<br>or repairs.   | Pushing and<br>uncontrollable<br>movement of the<br>tractor                      | 57 | 49.6 | Never disengage the clutch and put the gear<br>in neutral position when going downhill.                       |
| Sliding on the tractor8876.5Always keep tractor steps or plat forms clean<br>and free from oil or grease after maintenance<br>or repairs.stepsorplatformsand free from oil or grease after maintenance<br>or repairs.   | Accidental dropping<br>of implement on the<br>high ways                          | 61 | 53   | Lock the hydraulic system while moving implement on the high ways.  |
| Tepano  | Sliding on the tractor<br>steps or platforms<br>after maintenance and<br>repairs | 88 | 76.5 | Always keep tractor steps or plat forms clean<br>and free from oil or grease after maintenance<br>or repairs. |

Source: Field survey, 2013.

| Relevant informati  | on           | No of response | Percentage (%) |
|---------------------|--------------|----------------|----------------|
| Age 15 - 29         |              | 47             | 40.9           |
| 30-39               |              | 02             | 01.7           |
| 40 and at           | oove         | 66             | 57.4           |
| Total               |              | 115            | 100            |
| Years of experience | e 5 -10      | 70             | 60.9           |
| -                   | 11 -20       | 40             | 34.8           |
|                     | 21 -40       | 05             | 04.3           |
| Total               |              | 115            | 100            |
| Educational status  | FSLC         | 94             | 81.7           |
|                     | SSCE/ NECO   | 21             | 18.3           |
|                     | ND, HND/ B.S | c -            | -              |
| Total               |              | 115            | 100            |
| Training undergone  | e            | Nil            | Nil            |
| -                   |              |                |                |

| Table | 3.Other | relevant | information | on operators | in Nasarawa State |
|-------|---------|----------|-------------|--------------|-------------------|
|       |         |          |             |              |                   |

Source: Field survey, 2013.