*Research Article*

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# FOOD CROP PRODUCTION AND IMPACT ON HILLY AREAS OF BOYO DIVISION, NORTH WEST REGION CAMEROON.

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***Authors' contributions***

*This work was carried out in collaboration between all authors. Author CLM designed the study, wrote the manuscript. Author TN and MI supervised the final manuscript.*

**ABSTRACT**

The farmers of Boyo division have not had it easy with food crop production on the undulating nature of the hilly areas. They are faced with series of obstacles namely: erosion, landslide, critical runoffs, steep hills, no accessible roads to the hilly farms. Farmers have been putting in efforts to make sure that they are able to provide food for their families despite all the difficulties. This study examines the plight of food crop production on the hilly areas of Belo and Njinikom sub divisions respectively. The specific objective was to find out if food crop production on the hilly area can be more productive than in the valley area, if farmers alongside food crop production are interested in tree crop farming and to access the degree of food security and food self-sufficiency at household level in the sub divisions. The study was carried out in four villages in two sub divisions of Boyo Division North West region of Cameroon. A sample size of 115 respondents from Njinikijem, Baingoh, Bechii and boyo Mountain were involved in the study. Data was collected with the help of structured questionnaires, sampling and interview, micro soft excel and SPSS version 20 was used. The information gathered was examined and analyzed to come out with alternatives on food crop production on the hilly area. From the results it was revealed that the youths migrate to neighboring regions in search for arable lands for food crop cultivation that is profitable to them. Farming on the hilly area was a handicap to the crops as erosion washes down the fertile top soils while exposing the inhabitants to landslides which covered their houses and lives. Tree crops like plum, pear, mangoe, orange do well and can be planted for commercial purposes as well as using these trees also to control erosion. Settlement areas for the inhabitants can be checked and supervised by the council to control the risk of landslide. Food crop diversification to tree crop production or both should be encouraged to increase food security and financial sustainability as the tree crop will be sold to improve on livelihood.

**Key words:** Hilly Area, Erosion, landslide, critical run off, steep hills.

## RESUME

Les cultivateurs du Département de Boyo n, ont jamais eu cette facilite de produire les denrées alimentaires dans un milieu montueux et accidente. Ils font face à une séries d'obstacles tels que : l'érosion, le glissement de terrain, la vallée, les montagnes et le manque de route pour aller dans leurs champ. Les cultivateurs ont souvent fait des efforts de fait de s'assurer de leurs capacités à pouvoir de la nourriture pour leurs familles malgré toutes ces difficultés. Cette étude examine les conditions de la production des denrées alimentaires dans un environnement montueux de Belo et Njinikom de l' Arrondissement de Njinikom. Comme objectif spécifique, il était question de voir si la production alimentaire dans un environnement montueux est plus productive que celle effectuée dans les zones basses. Puis, de voir se les cultivateurs tout au long de la production sont aussi intéresses à produire des arbres afin d'expertiser le niveau de la sécurité alimentaire et la production alimentaire indépendante consommée à la maison et au niveau du département. L'étude a été menée dans o4 villages, 02 arrondissements, du Département. Près de 115 personnes ont répondu présent de Njinikejem, Baingoh, Bechii et Boyo qui étaient impliqués dans l'étude. Les données ont été collectées à l'aide des questionnaires et interview, et Microsoft Excel et SPSS version 20 ont était utilisée. Les informations rassemblées ont été examinées et analyses afin de ressortir avec des alternatives sur la production des denrées alimentaires dans les milieux montueux. Des résultats obtenus, il a été révélé que, le jeune migrant dans les régions voisines pour rechercher les terrains afin de cultivar les aliments qui leur seront profitables. Cultiver sur des hautes terres n'est pas le seul problème rencontre par les aliments comme l'érosion qui lave le sol fertile mais aussi pour les habitants qui sont exposés aux glissements de terrains qui affectent les aliments et les résidences. Il est donc note que les arbres fruitiers tels que le prunier, l'avocatier, le manguier et l'oranger n'ont pas de problème ce qui encourage le planteur pour des raisons commerciales contrairement aux pratiques de subsidence pratique dans ce domaine. Les recommandations ont été faites. Ainsi pour couronner ce phénomène, le gouvernement doit revoir l'installation de ces personnes qui vivent dans les zones à haut risqué afin de les empêcher d'y être. Les champs allouer aux cultivateurs par le gouvernement comme subvention, doivent leurs être parvenus à temps afin de leur permettre de planter a temps les implémentations effectives pour ce qui est du contrôle stratégique de l'érosion est de réduire l'allure de champs en hauteurs, et les collines, doivent être pris au sérieux pour que la sécurité alimentaire puisse être assure. Les populations peuvent apprendre les diverses manières de gêner ce type de terrains d'eux même afin d'améliorer la production.


**Mots clés** : Région montagneux, Erosion, Glissement de terrain, Ecoulements critiques, Colline ascendante

## INTRODUCTION

For two million years or more man has been dependent upon land for the bulk of his food. Man will continue dependent largely upon land for food in the foreseeable future Lester Brown 1976. Despite the richness of Africa in natural resources, food insecurity continues to be a problem in Africa (FAO, 1994). About 70% of the world's poorest individuals are people exerting in small farms (FAO, 2003), only 5% of these can be qualified as being, rich". Naab et al (2013), affirms that globally, traditional farming patterns as known decades ago are evolving, due to rapid urbanization and rural exodus in many countries. Looking at the continent of Africa, Africa has been dominated by traditional food crop farms. NEPAD, (2003), recorded that 33 million food crop family farms rely mainly on family labor, with farm sizes below 2 ha accounting for the more than 70% of food production in the continent.

In the past, most of Africa was sparsely populated, so farmers could choose the most fertile land, grow their crops for a few and, when the soil fertility and crop yields declined, they would abandon the area and move to more fertile land. The farming system, often described as" shifting cultivation" or" slash and burn" agriculture, was able to provide sufficient food and other products to satisfy the needs of the inhabitants in most seasons while maintaining soil fertility over a long term. This was a sustainable farming system in the past. As population increased, more of the land had to be cultivated for longer periods to satisfy the food needs.

Cameroon is a developing country with an area of 475,442 $km^2$ and a population of 23739218 million inhabitants. About 66% of this population live in rural areas and depend directly on agriculture and related activities. Small farmers cultivate an average of 1.8 hectares. The farming system in Cameroon has increased the rate of migration from the rural areas to

the urban areas or cities due to poverty (Word Bank 2010) and a fall in prices of cash crops and seasonal variability of prices. According to Alary *et al.,* (1994) in the Center region of Cameroon, the percentage of farmers' incomes derived from cocoa fell from 76 percent in 1976 to 45% in 1991, 9% in 1993 and 25% in 1994, while that from food crop increase from 11% in 1976 to 20% in 1991, 24% in 1993, and 30% in 1994 and is growing positively.

Agriculture is the mainstay of Cameroons economy. About 75% of the active population is involved in agricultural production, which accounts for 50% of total exports. (Wolfgang Grehhrke, (1997)

Belo is a very hilly area with steep hills, sharp slope with swift running and deep banks streams. Cultivation of food crop is often carried out on the walls of these hills and on the top of some. Stream banks and slopes are highly exposed to erosion, landslide while some parts of the valleys are occupied by buildings and farms.

A retrospective look into the world economic crisis of 1986 that stroke Cameroon resulting to changes in the world commodity market reveals that the value of export products such as cocoa and coffee fell drastically and remained low. For this reason subsidies were suspended and most agricultural development projects collapsed. Poverty increased in the rural areas and thousands of people had to receive food aid from United Nation (UN) and Food and Agricultural Organization (FAO). This foreign food aid programs damaged local food crop production because the prices for foreign foods became lower than the cost of producing in Cameroon, this forced farmers to abandoned farming. The admission of Cameroon in October 2000 into the Highly Indebted poor Country (HIPIC) initiative boosted funding for social programs to alleviate poverty especially in the rural areas.

Boyo division is noted for its hilly nature surrounded by steep hills to excessive steep hills. Increase in population and farm land degradation has over the times led to land scarcity for food crop production, pulling the farmers to carry out farming activities on dangerous areas where they are exposed to erosion, leaching away of the top soils which are fertile resulting to poor harvest. Land scarcity resulting from demographic pressure, has accelerated geographical mobility causing rural people to migrate to urban areas especially to South West Region of Cameroon.

Belo and Njinikom Sub divisions are not an exception as most of the farmers are members of Non-Governmental Organizations (NGOs), Common initiative groups (CIG) who benefitted from this HIPIC initiative. According to (UNDP, 2003) report on Human Development in Cameroon, 75% of the country's rural population lives below the poverty line of one dollar a day. About 59% of Cameroonians, including those in rural areas live in poverty, as they basically live from" hand to mouth " a situation which is not worthwhile in terms of sustainability. Considering the topography of Belo and Njinikom sub divisions, the attachment of the community to the consumption of their staple food crop maize through fufu corn and through a traditional drink called "n*kang", and in traditional ceremonies (marriages and deaths)* many farming families still go hungry. This is because yields are always low and insufficient to meet household demands throughout the year. This situation calls for express concern as to how food crop production on this hilly area can be improved to increase yields and ensure food security.

Majority of the farms are family-based units in which farmers make their own decisions on the use of natural and economic resources. The government realizes the productive capacity and potential of the small farmers and has been making efforts to help this sector in order to increase food crop yields.

Agricultural production can be seen generally to be decreasing due to many causal factors. These factors include: climate change, soil degradation, low soil fertility, land tenure system, illiteracy, high cost of farm inputs, insufficient improved seeds, non-application of chemicals to prevent diseases due to lack of finances, out dated methods of farming.

Soil degradation has significant impact on the worlds ability to meet future food demand opportunities existing in both technical and policy arenas for promoting better resource utilization and management Mohamed. (1987). Misuse of this land can lead to a serious and most often irreversible degradation Daniel C. Clay and Laurence (1987). It is probable that declining soils fertility due to erosion may cause fields on steep slopes to be" Mined" more rapidly and to regenerate more slowly(Figure 1a).

**Figure 1a: Erosion reaction on the hilly farms of Njinikom and Belo sub division in Boyo division.**

Access to farms on the hilly areas of these sub divisions constitute a major difficulty as no good roads lead to these farms making them almost inaccessible due to strenuous climbing and steep descending, which are obstacles to and from the farms. Considering all the above mentioned as hindrances to food crop production in Belo and Njinikom sub divisions, it is of vital importance to make mention of the three elements of the broadened concept of food: security, availability and stability of food supply and access-into an index of household food security. This implies using the Aggregate Household Food Security Index (AHFSI) which is calculated as food –gap between the nourished and the average national requirements, the instability of the annual food supply and the proportion of undernourished in the total population. The index ranges from 0 to 100, with 100 representing complete, risk-free, food, an index between 65 and 75 surely and 0, total famine. FAO (1986) categorized the food security situation an index rating below 65 as critical". Between the year 1993, Cameroon was categorized under "low" food security.

**Study area**

Boyo Division is 50km away from Bamenda. Belo Sub division is located between Longitude 10º11' and 10º30' East of GMT and latitude 6º4' and 6º20' north of the Equator. It takes a north east-south west orientation from Mbessa to Baicham. It is bounded by Njinikom and Fundong Sub divisions of Boyo Division to the west, Noni Sub division to the north, Oku and Babessi Sub divisions to the east and the Bafut Sub division to the south. The entire Sub division is made up of 29 villages covering a surface area of about 374 square kilometers.

The climate is greatly influenced by the topography, it is described as a tropical transitional climate from the rainy humid and continuously worm climate in the South to the extremely changeable (in terms of rainfall and temperature) but relatively dry and hot climate of the North. The high mountainous areas are cold (<15 º C) in Boyo hills whereas the low altitude zones are hot (average 27 º C) such as Mejang in Belo and Bechii plain in Njinikom Sub division(Figure 1b).

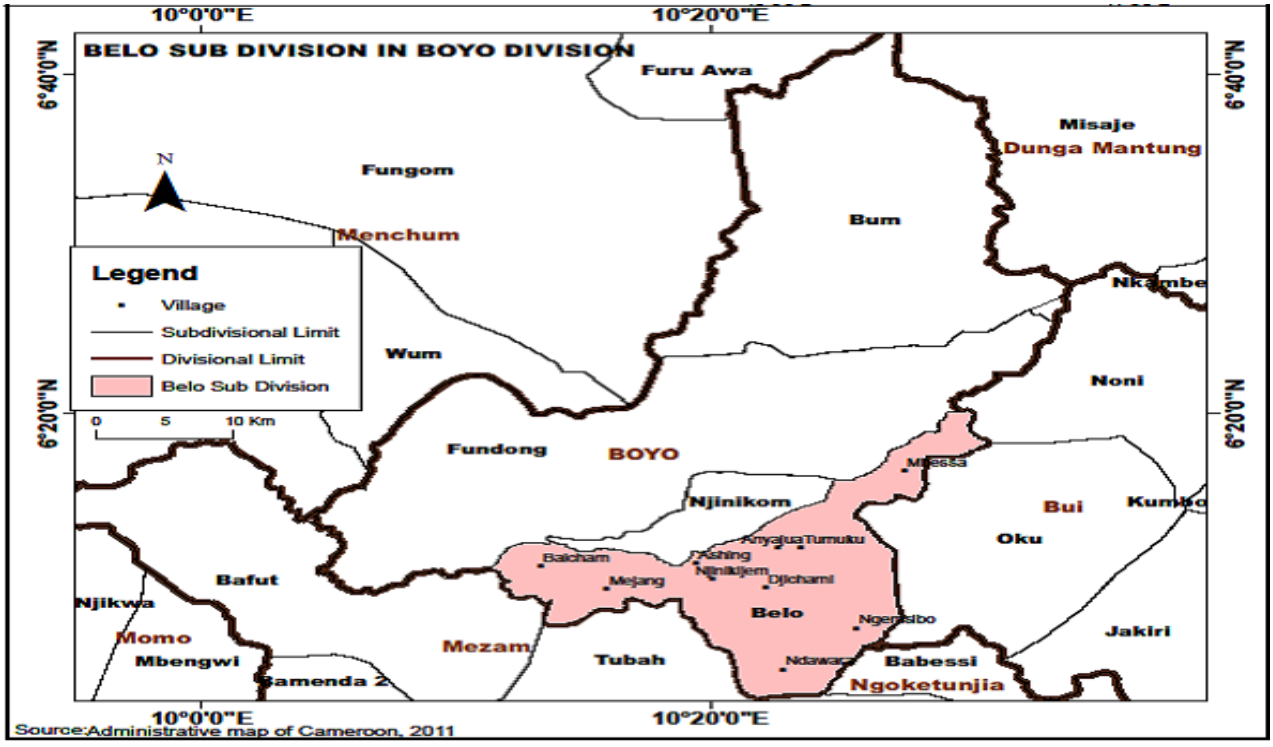



**Figure 1b: Map showing Belo and Njinikom sub-division in Boyo Division of the Northwest Region**

RESEARCH METHOD

The simple random sampling technique was used in this study. From Boyo division, two sub-divisions were selected that is; Belo and Njinikom.

From these two sub-divisions the sample was gotten as follows from Belo (Baingoh and Njinikejem) had 50 while Njinikom (Bechii and Boyo Mountain) had 65 respondents. The information gathered was analyzed using descriptive and inferential statistics. The results are displayed on tables, bar graphs and pie charts. expressed in frequencies and percentages while the Analysis of Variance test was used to test the null hypothesis.

Also the treatment of our questionnaires was done with the aid of the statistical package for social sciences (SPSS) and MS Excel. We obtained quantitative data used to carry out statistical analysis in evaluating the food crop production on the hilly and valley areas including the number of farmers in the area.

The study data was collected from two main sources: secondary and primary sources.

The primary data collection extended throughout the targeted period of five months being November-April because we had to follow the dry season and the beginning of the rains to actually appreciate the rainfall reactions on the hilly farms, with the help from representatives of the communities, self-administered questionnaires.Primary data was collected in November 2015 to April 2016 Procedure for primary data was through interview and Questionnaires administered at the level of the farmers. We talk with the farmers and got their own part of the farming story which helped us sample On the field, Semi- structured questionnaires were designed to facilitate data entry and to analyses the information gotten from our respondents.The secondary data used for this work was sourced from existing documents including those from previous researched works done at the University of Dschang, the Divisional delegation of Agriculture Bamenda, The Sub divisional Delegation of Agriculture for Belo and Njinikom Sub Division, Books from other libraries which entail the consultation of published and unpublished documents, Newspapers like the farmer's voice, journals and internet. These documents provided the necessary ideas and theories needed for the study.

Assessing farmers of the hills and valley farms, the council administration, stakeholders and quarter heads and our observation counted a lot as we could see for ourselves the constraints of food crop production on the hilly farms during hoeing, planting and harvesting of food crop on the hilly area of Belo and Njinikom Sub division.

**Result and Discussions**.

**Table 1: Responses from Belo and Njinikom sub division on hilly farming.**

| Sub-Divisions | | Number of respondents | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Belo Sub Division | 50 | 43.5 | 43.5 | 43.5 |
| | Njinikom Sub Division | 65 | 56.5 | 56.5 | 100.0 |
| | Total | 115 | 100.0 | 100.0 | |

To ensure a statistically sound representation of respondents Belo had a frequency of 50 giving a 43.5% while 65 from Njinikom with a 56% making a total of 115 respondents. This two sub divisions were highly taken in to consideration because they were noted with almost the same topographical features, with the same characteristics of food crop production on the hilly areas. They pose similar problem like erosion, landslides, swift runoffs and soil degradation. Poor harvest due to the washing away of top soils by erosion (Figure 2).

Majority of the respondent came from Bechii in Njinikom sub Division because this area is totally made up of farmers whose main activity is food crop production. The farmers are both hilly and valley farmers whose experience has much to do with this studies. They carry out cash crop production like cocoa, coffee sugar cane and kola nuts with subsistence farming of cocoyam, maize, beans and sweet potatoes.

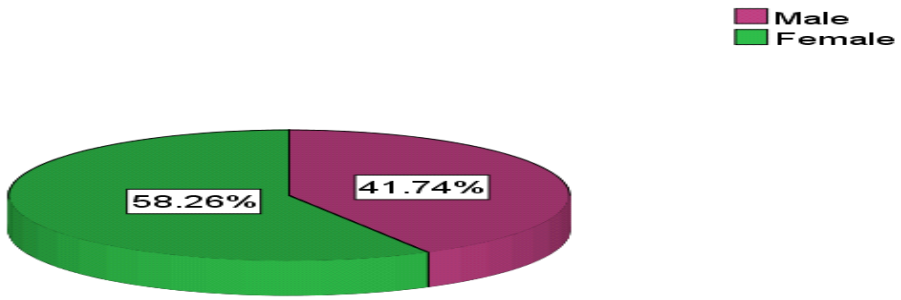



**Figure2: Gender distribution and farming on the hilly areas of Boyo Division**

48 male and 67 female respondents took part in the study making a total of 115 respondents. Ouden, (1980) In Cameroon women hold an autonomous sector in the agricultural chain including production, distribution and consumption. Women are more involved in food crop production on the hilly farms than the men in Boyo division. The men are more involve in cash crop farming like cocoa, coffee, Banana and plantain which is mostly carried out around the compounds which is fertile as such this hilly farming are mostly carried out by the women. Hilly farming can be seen as a result of lack of farming portions around the compound area.

**Marital status and farming on the hilly areas.**

Base on the marital status, results indicated that, Married 47.8% Shows that high number of married women are involved in food crop production on the hills in other to feed and improve on the livelihood of their families, single women are 42.6% the single women in Belo are very conscious of the fact that they need food both for themselves and to sale especially

corn, beans and Irish potatoes first to take care of themselves.

Following this studies the number of widows were very few who were involved in food crop production on the hilly areas as their highest support which they relied on, to bring up their children. Divorced cases were 3.5% the divorced were few only two of them were involved in food crop production on the hilly farms because they could not bear the conditions in their marital family compound farms, as " out of the marriage meant out of farming lands in that compound". The other two were doing petit trading activities making a total of 115 farmers' respondents giving a 100%. Most marriages were polygamous and the women and children were highly involved in food crop production, while the father only comes in to sell especially the cash crops,(Figure 3a).

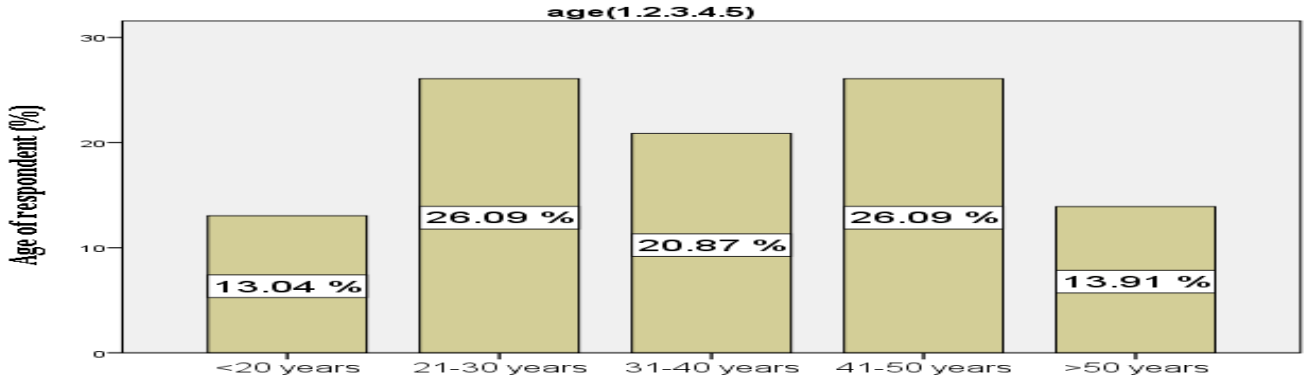



**Figure 3: Age of the respondents and food crop production on the hilly area.**

Those of the ages between 21 to 30 years were highly involved in food crop production as at this age most of them were married and had children who needed to be fed and also feed their extended family members. Students in secondary education testify it is through farming that some of them are able to pay their school fees. Programming their activities permit them carry out their education and food crop production as they sell part of their produce. Those of 41-50 were inhabitants who are actually carrying on food crop production in the village as their source of livelihood. (Table 2).

**The Educational Level of the respondents and farming on the hilly area.**

Some of the farmers were educated consequently they could read and write which had a positive influence on food crop production as they could read labels and instructions on how to handle farm inputs like fertilizers and chemicals like pesticides, insecticides. Some of the primary school leavers said they work on the farms because they didn't have money to continue with education. Those with secondary school certificates said they were involved in farming because they were not fortunate to pass the general certificate of education advanced level certificate (Table.2)

**Table 2: The number of farms owned by each respondent on the hilly area**

| Number of farms | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | One | 16 | 13.9 | 13.9 | 13.9 |
| | Two | 43 | 37.4 | 37.4 | 51.3 |
| | Three | 42 | 36.5 | 36.5 | 87.8 |
| | Four | 14 | 12.2 | 12.2 | 100.0 |
| | Total | 115 | 100.0 | 100.0 | |

Most of the farmers with one farm were mostly old people who could no longer climb the hills anymore and had given out their farmland to others who cultivate and share output as rent for cultivating their lands. Some of them just abandon the hilly farms when they are tired or old and can't climb the hilly farms any longer. Often at times a father distributes his land in to patches and shares among his children and since it becomes quite small following the number of children, they are bound to go to the hills and acquire more patches of larger farm lands to increase productivity.

**Farmers with farm land in the valley area.**

Results show that 64.35% farmers owned farms on the hilly areas while 35.65% farmers have farms in the valley areas. Most of the farmers testify that their reason for farming on the hilly slopes and even on the mountain top was due to the availability of patches of land, considering the fact that the valleys were fast occupied by early settlers who owned valley lands and use them for buildings of houses and family food crop production(Figure 3b).

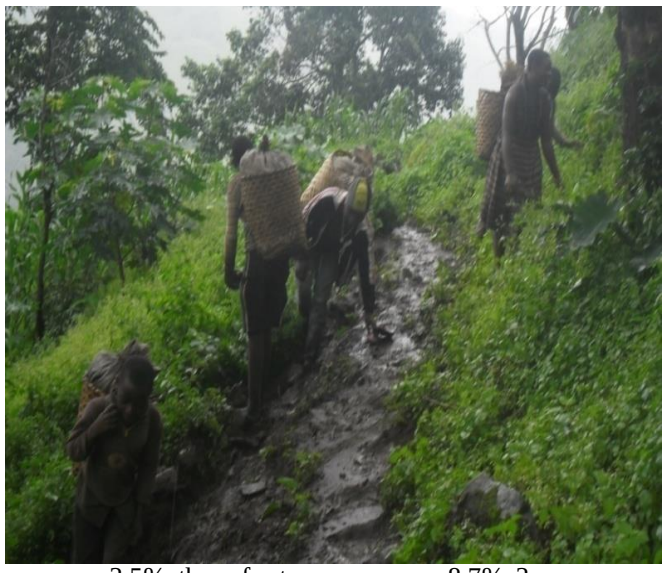
**Figure 3b: Mountainous food crop production on the Boyo hills in Belo sub division**

The farmers ascertained that the hillsides are steep where they can cultivate at will and is fertile although not for long due to erosion, landslide and soil degradation. Meanwhile the farmers of the valley cultivate in the valley because the soils are fertile. Distances to this valley farms create them the problem of transportation of food crop after harvest. IFAD.( 2001). The rate of food crop cultivation on the foot of the hills can have slow effect on food crop, quantitatively and qualitatively. Most of the farmers declared that hilly farms were the most tedious and difficult to manage with respect to the climbing and transportation of farm input 98 of the respondents giving 85.22% while (14.78%) said the valley farms were tedious making the valley farms quit exposed to water log as it often need to be irrigated.

Those with farms in the valley said most of them owned the field both for their farm land and buildings. They do farming around the compound year in year out. According to Partap (1995) Shama, (1996-1997-1998) Improves the conditions for mountain people. Development and further diversification of HVC (High Value Crops) in mountain Agriculture will also increase trade between highlands, (mountains) and lowlands (plains) with highland farmer, specializing in HVC such as fruits, vegetables, flowers, and medicinal plants and low land farmers specializing in cereal crops, thus an effective exchange mechanism which enables the improvement in trade in favor of hills and mountains farmers.

**Farmers according to duration of food crop production on hilly farm areas**

Those who have cultivated on the farm just for one year



were 3.5%, those for two years were 8.7%, 3 years were 22.6%, those for 4-9 years giving a 27.0%, those from 10-15 years 13.9%, those from 15 years and above had 24.3%.

The results here shows that those who have cultivated just for a year were mostly strangers who just came in to the place and are still struggling to get a farm land through friends or relatives. Those who have been from four to fifteen years were mostly owners of the hilly fields as such they only pass it from one generation to the other or part of it is sold strictly for cash by the owner.

Many farmers carry on crop production up to nine years without allowing the farm to fallow and by the tenth year to fifteen years they gradually reduce farming on certain parts of the farm land to rejuvenate the soil, increase fertility for future use. A better understanding of these changes can have important implications for development of sustainable mountains agriculture. Pradeep M. Tulachan Aug,(2001). Production on hilly areas can be improved or increased mainly due to improved access to modern inputs such as quality seeds, fertilizers, and proper irrigation, resulting from favorable government policies, nonetheless, there seems little prospect for expansion of the area under food grains, and per capita food availability may decline due to population increase.(Table3).

**Table 3: Types of input used in food crop production on the hilly farm.**

| | | No of respondents | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | **Fertilizer** | **64** | **55.7** | **55.7** | **55.7** |
| | **Pesticides** | **3** | **2.6** | **2.6** | **58.3** |
| | **Herbicides** | **1** | **.9** | **.9** | **59.1** |
| | **Kitchen manure** | **38** | **33.0** | **33.0** | **92.2** |
| | **Improved seeds** | **9** | **7.8** | **7.8** | **100.0** |
| | **Total** | **115** | **100** | **100.0** | |
| | | | | | |

Farmers who use fertilizer on their farms had (55.7%), while 33% of the farmers use kitchen manure and those who rely on good and improved seeds were 7.3%, meanwhile the respondents who rely on pesticides and insecticides were 2.9% and 0.9% respectively. Most of the respondents were reluctant to accept the use of fertilizer because they belief it loses the natural taste of their crops especially in vegetables and maize. Ndenecho (2012) in man's quest for food and shelter, many agricultural practices including subsistence with some cash crop production and pure commercial agriculture has been adopted. Toborn.J (2011).Adoption of Agricultural innovations. Some of the farmers use kitchen manure on their farms because they want to maintain the natural taste of their crops. Some use kitchen manure because they lack money to buy fertilizer .Often at times when they are promised fertilizers by the stake holders through their various NGOs this fertilizer usually reach them late or never reach them at all. Distribution procedure of the fertilizer at times is according to relationship (**man know man**). Majority of the farmers acknowledge the fact that with the help of the extension workers they have seen the difference between farms that have been cultivated without the use of fertilizer and have turned to appreciate the effectiveness of the use of fertilizer on their farms, and have accepted the practice of the cultivation using fertilizers to improve on their crop productivity. Food sustainability is gradually assured following this practice of fertilizer usage. About 9% of the enlightened farmers use improved seeds which they buy directly from the Research station IRAD of Bambui. As seen by Hendricks,(2005)

The number of farmers who would like to diversify from food crop farming to tree crop farming on the hilly farms gave 84.3% of the farmers, while 15.65% stood for only food crop production. The farmers who stood for food crop diversification gave their reasons with regards to high markets for fruits in the country and out of the country. Fruit that they were not actually selling at first were oranges, plums and pears. Pears served as soup to eat with corn fufu, plantain cocoyam as support crop for the cultivated cash crop (coffee). Minten,B et Reardon (2008) Food prices, quality and quantity, are higher in super markets versus traditional markets in developing countries. Today these crops gives cash as seen from other villages like Mamfe in the south west Region where plums, Oranges, are being supplied almost in all the regions of Cameroon and beyond.Van Veenhuizen. Rand Danso,G.(2017) Talks on the profitability and sustainability involve in Urban agriculture. Tree crops are doing well in Belo and Njinikom sub divisions the inhabitants accept to diversify into tree crop farming as a source of income generation activity for the improvement of livelihood. Boserup, (1985) worked on the conditions of Agricultural growth, contents that population pressure urges farmers to adopt more intensive or diversify cropping systems and, hence force them to innovate. Farmers according to food crop production and possible diversification to tree crop farming on the hilly areas.

Different tree crops, which farmers cultivate in association to food crops on their farms. Plums come first with 37.39%, Pears 40.87%, coffee 7.86%, oranges 5.27%, cocoa with 2.69%, mangoes 2.69%, and quaver 2.69%.The farmers who have plum and pear trees in their farms were quiet many as most of them knew that plum and pear was called **bush butter** and was used to eat fufu corn as a substitute for huckleberry so every home have at list a plum and or pear tree around the compound. Plum and pear trees became very popular and common in Boyo division let alone Belo and Njinikom sub division. The other tree crop that followed was coffee as it was a cash crop that had its

market at local and international level. Coffee was highly grown for local and commercial purposes until the fall of coffee in the international market that forced the inhabitants to cut down this economic crop and diversify to food crop on this hilly area, which brought the peoples life style from heights above to heights below following the topography of the area, which favored the cultivation of coffee.

**Farmers according to those who have witnessed the scene of land slide in the area.**

The number of farmers who have witnessed land slide and its effect on food crop production in Boyo Division specifically in Baingoh in Belo sub division (1986) and in Boyo hills of Njinikom where landslide is very rampant as the farmers continue to clear and cultivate the walls of the hills leaving the soil with a very loose texture under which lies water which easily pull down the loose soil causing landslide. Those who have witnessed stood at 59.13% in Baingoh where farmlands were covered including houses and killed some inhabitants. Those who have never witnessed stood at 40.87% referring to those who have never had the opportunity to see how landslide is detrimental to the area.

This study had three specific objectives, to find out if food crop production on hilly area is more productive than in the valley area, to understand whether the farmers alongside the food crop production are also interested in tree crop farming, and to appreciate the degree of food security and food self-sufficiency at household level on the hilly farm areas of Belo and Njinikom sub Division.

Following this study it is realized that Boyo Division is very hilly by nature. The difficulties associated with these hills are as follows: It exposes the farmers to strenuous climbing up to the hilly farms, Erosion, landslides, swift runoffs, poor accessibility to these farms is a cause for concern. Most of the farmers continue to cultivate on this hilly farms because they need farm land (space) for food crop cultivation which are more available on the hills than in the valley. The carrying of farm input up the hills with no accessible road network and also the pain of transporting this food item back home proves the difficulties of hilly farm.

Food crop production on the hilly farm area is not more productive than in the valley, these hilly farmers are also more than the valley farmers, who acquire parches of land and also have space on the hills where more pieces of land is cultivated to increase productivity. (Figure3C).

**Figure 3 C: Landslide action in Boyo mountain of Njinikom sub division covering vegetation and top soil**

The application of farm inputs to improve on the soil fertility, are often washed away by erosion.

Most farmers continue to cultivate on the hills though the soil continue to get loose as the rains fall the top soils are exposed to landslides and erosion. Following our interviews one can say that the people do not yet understand the need of avoiding food crop cultivation on this dangerous places as some of them have even gone back to settle around this very area of incidence.

Also it was realized that most of the hilly farmers do not have farm lands in the valley due to the fact that most of the areas seen as valleys in Belo and Baingoh are settlement areas which are made up of houses, schools, churches, compounds. Most of these areas are owned by early settlers who own them for their private use, like planting coffee, pears raring of goats, sheep for the family consumption and market. Some farmers have land both in the valleys and on the hills and they cultivate all.

This study revealed that most farmers in Bolo and Njinikom are not quite vest with the idea of tree crop farming as a business; they have trees like, pears, plums, kola nuts coffee which they consider as generation crops (inheritance) that was used as sources to substitute for huckleberry in eating corn fufu and kola-nuts for gift. In a compound one can find a kola nut tree that has been for one hundred years. They have not improve on its production as a cash crop, on like what we see in the West Region especially in Mbouda where pears are exported in trucks on daily bases to foreign markets like in Garbon, Tchad, Equetorial Gunea.

Food security cannot be insured in these sub division considering the fact that Belo and Njinikijom farmers cultivate on the hills twice a year but they still run short of food crop (maize) within the year as they often rush to Bamenda town, Tonga, Bamesseng to buy corn which is their staple food, also use for ceremonies. (Birth, Marriages, death celebrations).

Findings from the study reveal that government subsidies to farmers like fertilizers, improved seeds never get to the farmers on time. At times it reaches them when they have already planted and weeded their farms, and also that the quantities are always very small and the distribution is always base on familiarity. Price for fertilizer is very high that most farmers cannot afford. It was seen that the roads leading to this hilly farms are only bush road created by this farmers themselves, which makes transportation of their crops very difficult and also the transportation of farm input and farm produce.

## CONCLUSION

Following this study that was carried out on the hilly areas of Belo and Njinikom sub division it was made clear that though the farmers of this area are not good complainers but very hard working and energetic people, food crop production on this hilly area is not the best as compared to farming in other areas with similar topography as mentioned in the course. Due to the little knowledge on hilly farm managements there will be a need for tree crop farming as a possible solution to control erosion, landslides and critical runoffs using the roots of the trees that will help in holding firm the soil while creating way for fruit tree farming also as a source of revenue, while coming out of the trouble of erosion. Cash crop farming through tree crop planting practices will change the livelihood of the inhabitants of this area as tree crop farming will encourage fruits consumption for a balanced diet also to the inhabitants of this area. Planners as well as donors, stakeholders will have to understand the beneficiary population's exact problems and social needs, as to better allocate aid and funds for developmental projects in their communities.

Create awareness among the Municipal authorities, the Local population on the risk of food crop cultivation on the hilly areas. Enable the Municipal authorities of these areas, to look into the areas where the inhabitants are farming and construct farm to market roads, look for market for their products and survey the areas where they construct houses. The research findings will assist in exposing other researchable problem for further studies. IUCN encourages people living and farming on steep hills to adopt practices to reduce soil erosion by running water through a project called **Ecosystem-based adaptation to Climate Change**,(EACC) . IUCN encouraged farmers to dig trenches across the slopes of their hilly farms create contour bands in their fields, and plant elephant grass along the boundary lines of their farms. To encourage those who lived along river banks to leave a 15-metre wide buffer zone between the river and the farm to adopt practices like mulching, irrigation and planting trees. The outcome has been slowly but surely, over the last three years, the soils have been regaining its fertility and many farmers are quite pleased that they heeded to IUCN's advice. The government should help the farmers by bringing out policies that will limit the heights for food crop production on the hilly area in other to avoid the dangers of landslide in Boyo especially in Belo and Njinikom sub Divisions. The government through the Agricultural extension workers follow up the Agricultural calendar to make sure that the farm

inputs(fertilizer, improved seeds, farm materials) offer to the farmers reach them on the appropriate time so that they can apply on their farms on time(Rate and time of application) be respected.

Prices for fertilizer should be reviewed so that the subsistence farmers can buy.

More extension workers should be trained who will continue to meet the farmers on the field for education and on the field training, not living out training and visit programs.

Considering the fact that Africa and Cameroon inclusive have a focus on increasing production to improve yields, as they train farmers and transfer technology. Today extension goes beyond technology transfer to facilitate beyond training only, but includes assisting farmers to form groups, dealing with marketing issues and partnership with a broad range of service providers and other agencies by the government.

The mayor of the area executes most of the projects put in place by the government for the area while focus on the creation of farm to market roads to enable the farmers meet up with their farming obligations **to** and **from** the farms enabling them increase and improve on crop production in the Sub divisions. Create modern markets for the sale of farm produce. Quarter heads are custodians of the tradition and represent the government in their area of jurisdictions, they have as duty to implement all the decisions taken by the state on land tenure issues, they are therefore in a good position to follow up any security measure taken by the state for the wellbeing of his community. Respecting farm limitation will control trespassing, land demarcation and overall will bring peace and order to the people. The farmers are those who actually carry on the production process in the area they are the ones that need all the possible support in crop and animal production like allocating the fields, doing the necessary farming activity right down to harvesting, storage, and marketing. The farmer should take upon themselves to be informed as to inform their own communities on the advantages that the government often puts in place through the volunteered workers, extension workers, Agricultural experts. Researchers, Agricultural shows, open door day, the farmer's voice newspaper, radio programs on farming etc. Farmers should be interested in getting information concerning their farms. They should work in collaboration with NGOs. Attend trainings, the farmers should respect all the orders laid down by the government because it must be for their good. Re-orientate agricultural services. The re-orientation of agricultural research systems to fully involve farmers will underpin intensification in the Irrigated and Rain fed Mixed Systems and enterprise diversification in all systems. Components include: extension services based on a variety of public and private service providers; and greater support for rural agribusinesses to create off-farm employment for farmers. Revitalized agricultural education systems like new approaches to science and higher education learning systems are particularly important in the training of agriculturalists who will work in both the public and private sectors. Components include: the adoption of the significant advances in interdisciplinary learning and systemic thinking which have played such an important role in agricultural education elsewhere in the world. Rationalized Agricultural policies need to re-orientated develop towards the elimination of poverty based upon sustainable resource use. Components include eliminating subsidies for the importation of cheap grains, as well as other forms of support for low urban prices at the expense of poorer farmers and pastoralists.

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