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Agricultural Extension: An impetus to Improved Agricultural Production and Livelihood Sustainability in Bui-Division, Cameroon

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Abstract

Background: Low agricultural production got its roots from diversified sources that are both physical and human. It plays a negative role in the livelihood sustainability of rural dwellers. Agricultural extension goes beyond generating knowledge; that is, it takes knowledge and makes it available to farming households via trained agents. Analyzing the role of agricultural extension in improving agricultural productivity and livelihood sustainability of farmers in Bui is the objective of this write-up.
Materials and methods: For our objective to be attained, the qualitative and quantitative research design was used where data was collected from primary and secondary sources. Field data was collected using a random sampling technique from agriculturalists in 870 rural households, rapid Rural Appraisal tools, questionnaires, structured interviews; focus group discussions, on-the-spot, and participant observations.
Results: It was found that; 82% of the challenges faced by farmers in Bui-Division are poor soils, insufficient manure, poor seeds, poor technics of farm production, insufficient farm tools, crop and animal diseases, and rugged relief. Farmer's assistance from Agricultural Extension workers increased manure application from 35% to 81%, meanwhile 380 groups have received training on improved farm practices. This training has helped members to reduce pre and post-harvest losses from 30% to 5%. Through different practices introduced by Agricultural Extension workers to farmers; 62% of farmers have realized improvements in crops and animal products thus, improvement in livelihood sustainability.
Conclusion: Agricultural Extension is indispensable in agricultural improvement and should be encouraged in rural milieus.
Key Words: Agricultural extension, Agricultural production, Capacity building, Livelihood sustainability

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I. INTRODUCTION

Low agricultural production affects the livelihood sustainability of the rural population negatively in the world at large. More than 75 % of the world's poor are food insecure and live in rural areas mostly depending on agricultural production for their subsistence ([1]; [2]). Livelihoods comprise people's capacities and their means of living, including food, income, and assets [3]. In the world, food insecurity, poor nutrition, poverty, and low incomes are directly linked to low agricultural production. Over 850 million people in the world are undernourished [4]. Increasing farmers' income through improved productivity is an important element in agricultural development and poverty reduction strategy [5]. Effective agricultural practices can enable and sustain rural livelihoods, particularly in rapidly developing and transforming areas [6]. The livelihood of farmers is an important factor affecting the prosperity of both industry, and human life in general. Livelihood is sustainable when people can cope with the changes in fragile environments and can recover from external shocks, as well as maintain or strengthen capacities and assets [7].

Factors that contribute to low agricultural production are diversified. Major constraints towards increased production in Southern Africa were identified as: a shortage of land; limited education; unavailability of credit and inefficient market outlets [8]. Recently in Sub-Saharan Africa, it has been due to climate, soil quality, slavery, and disease [9]. The rural poor and especially smallholder farmers face considerable difficulty in accessing credit, services, technologies, and markets that would allow them to improve the productivity of their natural resources

and labor [2]. South East Asia is facing a great challenge to sustain the livelihoods of more than 540 million inhabitants as 70% of the region is covered with mountainous areas that are hard to reach and even harder to cultivate because mountainous areas are prone to soil, wind or water erosion [10]. Soil erosion in particular changes the physical, chemical, and biological characteristics of the soil, which leads to a drop in potential agricultural productivity [11].

Agricultural Extension is a process of working with rural people in order to improve their livelihoods. The absence of agricultural extension means farmers will lack access to the support and services required to improve their agriculture. They link farmers and other actors in the rural development agenda [12]. This involves helping farmers to improve the productivity of their agriculture and developing their abilities to direct their own future development [13]. In agricultural-dependent economies, it has been the main conduit for disseminating information on farm technologies while increasing farm productivity and revenue [14]. Through group formation, Agricultural Extension Officers assist farmers to have a collective effort that helps them access important services like credits, inputs, and markets for improving agricultural production [15]. Before 1990 in Bui-Division, agricultural production was characterized by primitive traditional methods/techniques of production that contributed to soil erosion. Seeds and animal species were not improved; there was little or no application of fertilizers, inadequate storage facilities, little knowledge of production, absence of training and innovative techniques, and frequent conflicts. Output from farms was low, affecting the income of farmers and rendering them poor, and negatively affecting the sustainability of their livelihoods. After 1995, farmers were assisted through various Agricultural Extension/advisory services who came in at different intervals with varied objectives and goals; they contributed to improving agricultural production thus influencing the sustainability of the farmers' livelihoods. Some of their activities were centered on knowledge transfers through training, the introduction of improved crop seeds, trees, and animal species, management of risks and diseases, and implementation of marketing strategies.

II. MATERIAL AND METHODS

Study Design: Qualitative and quantitative
Study Duration: The study was carried out from January 2019 to March 2020.
Sample Size: 870 households
Research Tools and Methodology: Data was collected from secondary sources and primary sources. In order to collect primary data, Rapid Rural Appraisal (RRA) tools (problem tree, historical profile, and a problem pyramid) were used; with the RRA tools, a group of farmers in a non-classical manner unconsciously revealed the problems they faced and proposed solutions to the problems in a hierarchical order. This method aided the researcher to understand the major causes of poor agricultural production. Other prepared research tools were questionnaires, in-depth interview guides, focus group discussions (FGDs), and indirect and participant observations. Data from secondary sources was gotten from libraries, the internet, and documentary centers where textbooks, articles, projects, reviews, and publications related to our research topic were consulted. As for the primary data, a prepared questionnaire was administered to 870 farmer households randomly selected in the study area. Structured interviews were carried out with three (3) resource persons of the Divisional Delegation for Agriculture, and two (2) Extension workers. Four (4) FGDs with 9-11 members were held with farmers during their meeting (Njangi) days to apprehend information that could not be easily gotten from individuals.
Study Location: Bui-Division is one of the administrative Divisions of the North West Region of Cameroon. It is located between latitude 6° 00′ and 6° 31′ north and Longitude 9°45′ and 11° 51′ east of the Greenwich meridian. Bui- Division covers a surface area of about 2300 km^2 making for 13.3% of the land area of the North West Region. Donga Mantung Division borders it to the north, Ngo-Ketunjia Division to the south, Noun Division (West Region) to the east, and Boyo Division to the west (figure no 1). Bui-Division is divided into six Sub-Divisions; Jakiri (478km^2), Kumbo (520km^2), Oku (244 km^2), Noni (314 km^2), Mbven (698 km^2), and Nkum.

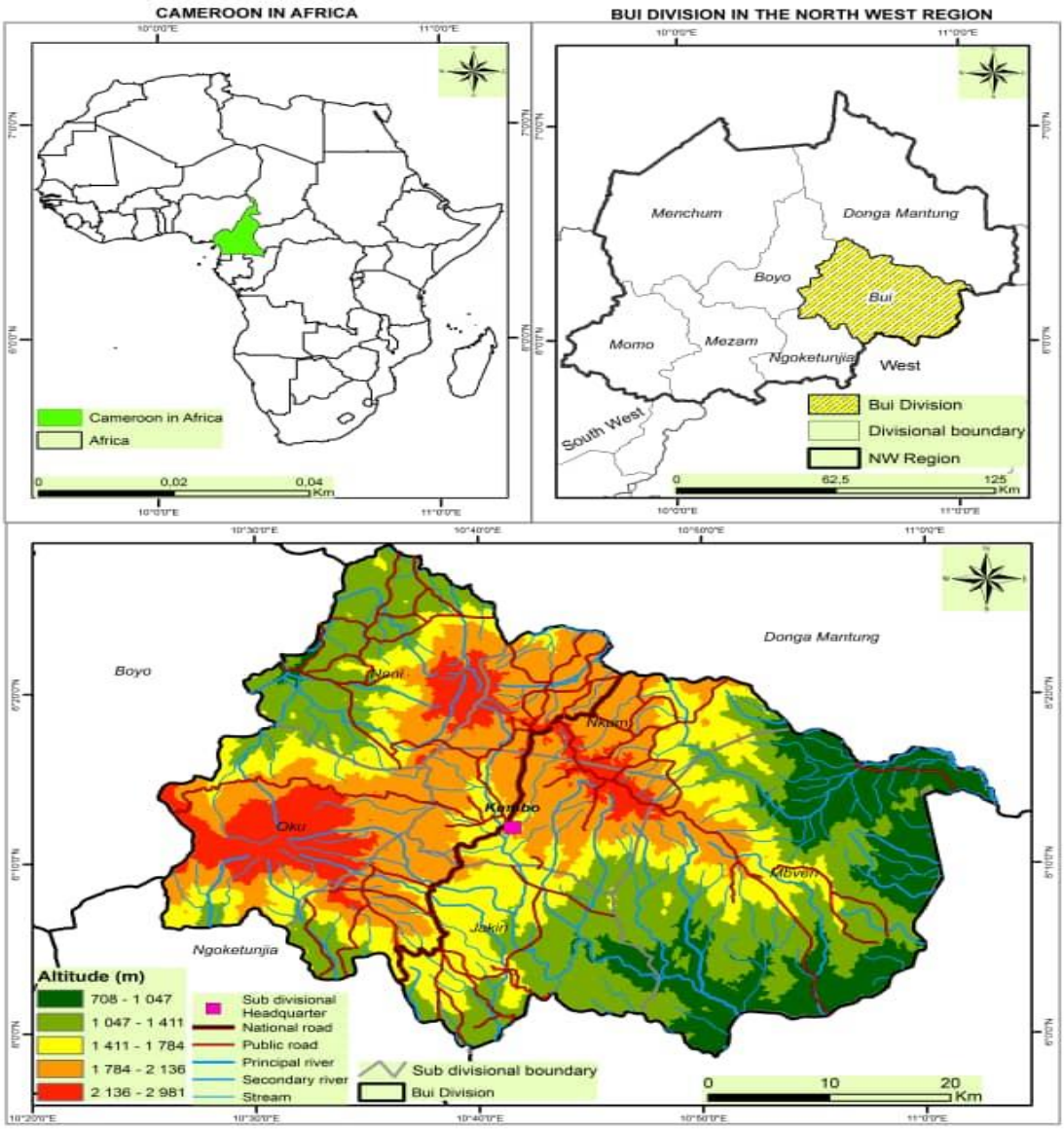

Figure no 1: Location map of Bui-Division
Source: Geospatial Informatics Services Consulting, Yaounde, 2015

III. RESULTS

1. Causes and indicators of poor agricultural production

Challenges faced by farmers in Bui-Division before the intervention of Agricultural extension were caused by physical and human factors that directly resulted in low production of crops and animals (82%). This was because of limited resources to purchase manure, poor farming methods, leaching of soils caused rugged relief, inadequate storage facilities, unavailability of improved seeds and materials, limited and/or wrong application of phytosanitary products, inadequate sales of products, and low self-esteem in women. All of these were manifested in low income, low nutrition, poor health, and gender inequality (figure no 2). From field findings, 67% of respondents had different reasons attesting to this low productivity meanwhile 33% were either neutral or had different viewpoints. Out of the 67%, 50% of them claimed that low agricultural production was caused by Poor farming methods, 36% declared that it was caused by lack and/or limited use of manure, 14 % of respondents upheld that it was caused by Poor seeds and non-improved species of animals.

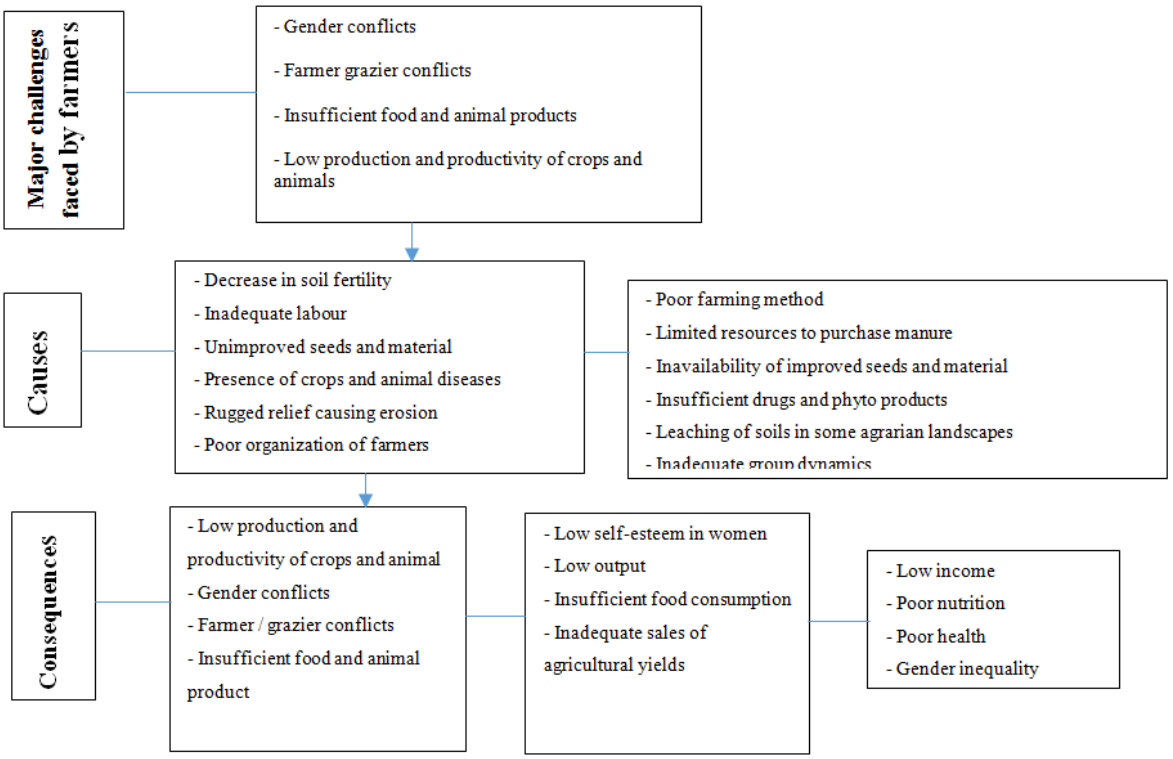

Figure no 2: Presentation of identified challenges, their causes, and consequences using the RRA technique
Source: Field work (2018/2019)

Field investigations revealed that before 1980 and afterward, farming methods in Bui-Division were described as poor, meanwhile agroforestry was mostly linked to subsistent farming. The trees used were for subsistent purposes, which produced very limited manure. Many reasons were advanced by farmers for the low productivity of some agrarian landscapes in Bui-Division (table no 1). Farmers depended on inorganic manure, which was expensive and difficult to obtain. The expensive nature of inorganic fertilizers made some farmersnot apply them on their farmlands. This inability to apply manure led to lower outputs; thereby affecting farmers' incomes. In addition, the seeds used by farmers were not modified/improved.

Table no 1: Respondent's responses on reasons for the low productivity level of some Farmlands in Bui-Division

Sub-Division	**Reasons for low productivity due to agrarian landscapes**		
	Poor farming methods	Lack of manure	Poor seeds and local species of animals
Jakiri	105	61	18
Kumbo	109	86	40
Noni	20	12	7
Mbven	16	10	4
Oku	31	27	9
Nkum	16	12	5
Total	297	208	83
Percentage (%)	50%	36%	14%

Source: Fieldwork (2018/2019)

2. The Role of Agricultural Extension in improving agricultural Production and livelihood sustainability

The improvement in agricultural production and livelihood sustainability of farmers was achieved through efforts made by Agricultural Extension who intervened at different periods with varied strategies and objectives. From 1995 - 2021 a lot was done in this framework. That is, training on improved agricultural practices that ensure the sustainability of landscapes, introduction of novelty (improved crops and animal species), management of risk and diseases on farms, teaching on marketing strategies, and encouragement of gender balance via capacity building (table no 2). More than 350 groups received training on agroforestry practice and their implementation has ensured improvement in agricultural production. Farmers were able to grow a variety of food crops, which helped to reduce hunger, and food insecurity. Hence, their standard of living was raised and this made farming an indispensable activity to the rural dwellers.

Table no 2: Plan of Activities by Agricultural Extension for Farmers in Bui-Division from 1995 – 2021: Their Role in Solving Production Problems

OUTPUT	ACTIVITIES	1995+	2000+	2005+	2010+	2015+	RESOURCES	TRAINERS
Low-post harvest	-training on post harvest management of trees, crops, and animals	x		X	x		-Training materials -Logistics -Setting of nurseries	-American pisco volunteers -RIBA AGC -HPI
	-Training on the different agroforestry practices -Introduction of trees species and distribution, Planting in farms		X	X	x		-Set up of equipment	-American pisco volantees -CENDEP -ANCO -Kilum Project -IRAD
	-Training in milk processing				x		Training materials -Logistics	-HPI
Better organization and management of groups	-Training on group dynamics and Leadership	x		X			-Training materials -Group	-MINADER, MINEPIASHUMAS
Improved soil fertility	Sensitize and carry out voluntary counseling and testing -Integration of trees on farmland				x		-Finance	-American pisco volunteers -RIBA AGC -CAMGEW
Access to markets	-Training in the marketing of crops, animals, and trees				x	x		MINADER, MINEPIA -CAMGEW -HPI -NWCA -IRCCA
Reduced prevalence of crop, tree,	Farm visit							MINADER, MINEPIA IRAD HPI

and animal diseases								
Improved gender relations	-Sensitize farmers on gender equalities -Gender assessment				x			CAMGEW HPI

Source: fieldwork (2018/2019)

Trainings received by farmers on agroforestry practices and associated activities as seen in table no 2 have transformed farmers' knowledge and intelligence. Through this project plan, farmers built knowledge, and developed competencies that assisted them in solving real-life situations like nutritional, and marketing problems. It also helped in their capacity building thereby embedding them with more skills and technologies that were indispensable for the agricultural production process. Heifer Project International (HPI) also trained more than 300 groups on how to rear improved breeds. More than 95% of members attended all group activities and all members got assistance when faced with challenges; income-generating activities were functional in all groups. From 1995 - 2017, there was a series of activities carried out by Agricultural Extension to boost their knowledge and skills that were considered vital for agricultural production. The output from training was low-post harvest, better organization, and management of groups; improved soil fertility programs; improved access to markets; a reduced prevalence of crop, tree, and animal diseases; and improved gender relations.

2.1. Agroforestry Practices

Agroforestry practices applicability is a means of improving soil fertility and increasing animal fodder introduced by Agricultural Extension. The introduction of agroforestry species like *calliandra*, and *accacia* through practices such as contour bund/ alley cropping in 1995 by American Pisco volunteers in Bui-Division marked a great change in agrarian landscapes. This was accompanied by some NGOs whose main objectives were based on transforming agrarian landscapes. An example was the RIBA agroforestry Centre, which worked with the Pisco volunteers since 1995 and trained more than 350 groups of agriculturalists on ways of fighting erosion. They trained farmers, by educating them on how to apply these methods on their farmlands. Different tree species were nursed and freely distributed to farmers. The Kilum Forest Project trained farmers on agroforestry techniques, nursed, and provided trees freely to farmers since 1999; this yielded a great impact on the agrarian landscape. CAMGEW, ANCO, and CENDEP were involved with agroforestry practices to fight soil erosion.

CAMGEW distributed more than 900,000 seeds of *Leucaena, Tephrosia,* and *Sesbania* (for animal fodder) to over 139 farmers, including 38 women in seven (7) villages. These species are nitrogen fixing and can be grown together with crops including coffee, potatoes, beans, huckleberry, cabbage, yams, and corn. In addition to providing nitrogen for crops, the trees provide shade and help prevent erosion on sloping ground. CAMGEW also distributed 60Kg of *Bracharia* seeds for obtaining fodder in the dry season when fodder is scarce. In 2011, ANCO trained project community members on aspects of tree nursing thereby providing them with nursed trees, and seeds; pasture was improved for grazing purposes. CENDEP, since 2008, was producing seedlings and about 11000 of them were produced and planted on 31 hectares of land. It should be noted that trees provided by different Agricultural Extensions were used in improving the soil fertility of farmlands in a bid to increase yields. This was achieved through training on the use of windbreaks, firebreaks, and contour bunds to check soil erosion; improved fallow, and use of compost manure to improve soil fertility.

2.1.1. Use of windbreaks, firebreaks, and contour bunds

The rugged relief nature of Bui-Division influences soil erosion thus leading to poor agricultural production. The elevations range from 708-2981 m. According to field observations, close to 35% of Bui-Division is covered by low lands while 70% is made up of hills, mountains, and escarpments. About 65% of crop production is on steep slopes described as rocky, hard to cultivate, degraded, and infertile which leads to low output. Windbreaks or shelter belts are the most widely used forms of agroforestry for soil erosion control as they slow down wind arms and divert their force to higher altitudes. It was found that some farmers actually abandoned certain farms because of strong winds that 'sweep' away crops and soils thereby negatively affecting output; this was evident in Kishiiy, Yang, and Bamdzeng. The introduction and use of trees like *Erythrina,* and *Prunus*

Africana by extension workers was used in protecting farms against wind thereby reassuring crop production. These tree species ensure moisture on farmland while reducing the rate of dryness on these farms thereby preventing soil loss or erosion by winds. When moisture is maintained on farmland, the growth of crops is equally ensured. According to [16], [17, and [2], trees used as windbreaks have the ability to withstand strong winds through a deep spreading root system to add stability to trees against wind blow. In more than 85% of African countries, mineral fertilizer use is still very low. Particular attention should be paid to the use of nitrogen-fixing tree species and organic matter as an alternative to mineral fertilizer [18]. Firebreak was used as a method of preventing soil erosion on agrarian landscapes in the study area. Firebreaks are very necessary during the dry season to prevent fire from getting into food crop farms. One of the major problems faced by farmers is that, fire causes direct burning/destruction of food crops and their indirect destruction via the extinction of nitrogen-fixing bacteria organisms that fix nitrogen naturally in the soil and makes it fertile. The destruction of soil organisms entails the destruction or loss of soil nutrients necessary for plant growth.

Contour bunds are produced using plant shrubs such as *calliandra*,and *accasia*. The roots of these trees hold the soil particles together, and the constructed bund encourages the infiltration of rainwater into the soil while solving the speed of water washing down the soil on farmlands. The use of contour bunds during rainy seasons helps to retain runoff and the leaching of useful soil nutrients. Soil build-up due to this practice is as much as 30cm (1 foot) per year- rich topsoil that would otherwise have been washed away [14]. The introduction of trees on farmlands prevents soils from being exposed, and acts as shade thereby conserving the soils and ensuring their sustainability. From field findings, 68 % of respondents attested that agroforestry has succeeded in controlling soil erosion on their agrarian landscapes; 32 % confirmed that leaching on farmlands was controlled through contour bund, where, 43 % of them used windbreaks to control wind erosion. It was also noticed that 25 % used firebreaks to control soil erosion.

2.1.2. Improved fallow and use of compost manure

Improved fallow practice as a source of Green manure for soil fertility involves all green leaves harvested from introduced agroforestry tree species and used on farms to increase soil fertility. It is an agroforestry practice where, a farmer in anticipation to cultivate crops on a particular piece of land allows the land uncultivated for about 5 - 6 months; during this period, *tephrosia, accacia*, or *sesbania* seeds are spread on farmlands. Farmers who practice animal rearing alongside food crop cultivation use the leaves of the trees for pasture. This system helps animals to gain weight while the waste passed out is used as manure to fertilize the soil and improve plant growth and yields (plate 1). When the 5^{th} or 6^{th}month reaches, the trees are off rooted to form ridges (green manure) on farmlands. Composting is a process that transforms organic materials into humus. It is a cheap and effective organic method used to improve soil fertility instead of inorganic fertilizers that are becoming more expensive and not easily affordable by 96 % of farmers in the study area. Proper composting relies on aerobic (requiring oxygen) decomposition that consists of carbon and nitrogen-rich organic materials such as air, water, carbon-rich materials that are old brown or yellow fibrous vegetation, and fresh manure. Many agroforestry tree species (*calliandra, accacia, leucaena, sesbania, tephrosia,* and *erythrina)*are used in composting manure.

Agroforestry practices have changed production systems from extensive to intensive through the use of organic manure. This is because agroforestry practices have helped 81 % of farmers to cultivate with organic manure. As a result, 54 % have realized improvement in soil fertility via an increase in crop yields. The sale of manure from agroforestry signifies a diversification in the sources of income, which was not the case with the old system of production. Through such practices, farmers have set up home gardens, which are described as small with high application of manure. The high use of manure improves soil fertility, thus increasing output. Various trees and shrubs from agroforestry provide less expensive feed for animals. These animals reared under the system are improved species rather than local, which ensures an increase in output.

3. Boosting agricultural production

Farm inputs provided by Agricultural Extension are improved seeds and animal species, and farm tools. The government (MINEPIA) through the creation of the National Center for Animal Husbandry, Veterinary, and Halieutic Training in Jakiri Sub-Division went a long way to assist the rural community via training techniques on improved animal rearing. Heifer Project International, Cameroon (HPIC) carried out training on improved species of animals such as Brahman, segmental, and Holstein. After training, animals were distributed to group members and followed up. Most of the improved breeds were gotten by way of artificial insemination; they produced more milk that was transformed locally by farmers for consumption. The excess milk was sold raw to a dairy factory located in the study area for further processing. Farmers in Bui-Division via the Ministry of Agriculture and Rural Development (MINADER), received improved seeds for an increase in agricultural

production. The improved seeds coupled with the training received led to high production. The Integrated Rural Community Center for Agriculture based in Meluf, Kumbo sub-division provided farmers with farm equipment like spades, wheelbarrows, hoes, and hybrid seeds to invest in market gardening, which was very lucrative. RIBA, an agroforestry center, introduced different practices like marcotting, and rooting of cutting that encouraged rapid growth of trees that bear fruits within shorter periods and improved soil quality. This rapid method of multiplying fruit trees changed production methods from the use of local tree species to improved ones. From field enquires, 29 % of respondents were cattle rearers who nourished their animals with less expensive fodder, 42 % were goat rearers, 19 % were pig rearers, and 10 % reared fowls. This new system of animal rearing gave women the opportunity to diversify production.

Plate 1: Manure gotten from agroforestry practices

Photo1: *upgraded animal stall*

Photo 2: *Collected animal dung/droppings*

Photo 3: *Dung/droppings applied on a cultivated farm*

Photo 1 shows an animal stall in which animals are kept and fed. The droppings and/or animal dung is collected and preserved (photo 2) to be used as manure on farmlands (photo 3) to improve soil fertility and increase yields. The stored dropping is either used by the rearer on his/her farm as a source of manure or is sold to gain income through its sale for other needs. The manure, therefore, applied on farms, helps improve soil fertility thereby increasing output.

4. Agricultural training programs

In Bui-Division, since 2014, an NGO known as Strategic Humanitarian Services (SHUMAS) took lead in training farmers on agricultural innovation programs. SHUMAS trained youths on agro-pastoral activities, climate-smart agriculture, agro-pastoral activities, production of crops, vegetables, livestock for sustainability, provided internship opportunities to students from the professional agricultural school at their Biofarm Centre; promoted peri-urban agriculture through urban food plus project, and Empowered women farming groups(practical training).Trainings cover issues on vegetable/crop production, livestock rearing, and composting. More than 35 youths received training. This NGO offered short courses to women groups and persons interested in sustainable agricultural methods on pig farming, sheep farming, poultry production, seed selection, renewable energy, farm management, and food processing.

HPI and SHUMAS also trained farmers in the management of risk and diseases. Farmers were encouraged by HPI and SHUMAS to do crop rotation and application techniques of pesticides/insecticides on the crops and/or animals. Due to the training, farmers knew the exact time and how to apply the chemical inputs on their farms. The training aided to reduce the rate at which diseases attacked their crops and animals. The training helped to reduce pre and post-harvest losses. Farmers (74 %) opined that their farm yields increased after they were trained and this led to an increase in income. HPI trained farmers in their various groups on marketing strategies for their farm products; as such, members were aware of fixed market prices of their produce in neighboring markets and some groups organize bulk sales for beans and potatoes for their members. There was the creation of hotspots for sales of farm produce and it helped to minimize post-farm losses thereby boosting the income of farmers and ensuring the sustainability of their livelihoods.

IV. DISCUSSIONS

Technical assistance from extension services and associative groups is very important in increasing agricultural output. A close collaboration between extension services and farmers permits them to exploit traditional know-how and use them in mainstreaming adaptation. This approach enables the combination of indigenous knowledge with science [19]. Agricultural Extension lay emphasis on inputs and outputs management. Farmers are guided on seeds and animal selection; that is, they furnish farmers with improved seeds and improved animal species, improved techniques of applying manure on farms, and are drilled on sustainable landscape management. Output Management has as objective to reduce the risk of poor harvest and train farmers on better marketing strategies. Field inquiries revealed that a bag of inorganic fertilizer cost 40 000 FRS and farmers were unable to buy it. According to [20], due to the unaffordable prices of inorganic fertilizers, not up to 35 % of farmers are able to apply inorganic fertilizers on their farms, thus resulting in low output from crop production. A majority of agroforestry trees used by farmers are nitrogen-fixing bacteria trees that help to fix nitrogen in the soil useful for crop growth thereby boosting output and ensuring the sustainability of farmers' livelihoods. Agroforestry improves soil fertility through the recycled litter deposition and nitrogen-fixing mechanism of trees [21]. The system brings about stability that can lead to soil conservation [22]. The trees prevent direct contact of water with the soil during rainfall thereby reducing the rate at which nutrients are washed and carried away. According to [23], while practical methods and systems for the incorporation of trees on farms still need to be developed, evidence from research shows that leguminous trees planted along the contours of slopping lands can help reduce soil erosion. *Sesbania* organic nitrogen source provides enough nitrogen to support vegetable yields [24].

The integration of trees into farming systems lead to the development of Agroforestry agricultural intensification. The production of animals, crops, and trees has brought about interconnected processes that are beneficial to each of them. When trees are introduced to the farm, they provide manure to the soil. Crop residues are also used in fertilizing and nourishing the soil. The nourished soils favor the growth of trees used as fodder. The rich fodder helps in feeding animals; thus improving animal output. Animal droppings collected are very rich in nutrients thus ensuring soil fertilization, and favouring plant growth. In reference to [25], *Leucaena* forage contains 20 % crude protein and is highly digestible, and provides a consistently high-quality diet throughout the year), whereas in normal circumstances, crude protein levels in tropical grass rarely exceed 10 %.Many trees are used in agroforestry trees as *calliandra, tephrosia, sesbania,* and *acacia* act as manure on different farms [26]. Improved fallow using leguminous trees and shrubs is well known widely, and an increasingly adapted agroforestry technology for soil improvement [27]. Improvement in the production and productivity of agricultural products has increased farmers' income and reduced poverty thereby reducing the vulnerability of livelihoods. From field findings, 62 % of farmers realized improvement in crops and animal products thereby improving the sustainability of their livelihoods. Through the different products/outputs gotten, farmers were able to feed their families and pay hospital bills and children's school fees. In addition, income gotten from the sale of their produce

was used for seed purchase, farm equipment, and inorganic fertilizers. Part of it was saved in 'Njangi houses', credit unions for unforeseen circumstances.

V. CONCLUSION

Agricultural Extension has revolutionized agricultural production through the different practices, which are accompanied by improved seeds and animals. Though much needs to be done in this aspect, the different efforts made by some advisory services cannot be underestimated. These farmers need constant follow-up to ensure the correct use of chemicals. Agricultural extension is an indispensable pillar in rural agricultural development because rural farmers lack the necessary information for agricultural production. The assistance of this service enables farmers to raise incomes that facilitate production. The provision and training of farmers by Agricultural Extension on Agroforestry practices have solved problems of inadequate manure, as trees are used in improving soil fertility, and some of the trees have solved the problem of eroded agrarian landscapes. The improvement in agricultural production has reduced food insecurity and has gone a long way to reducing poverty and improving livelihood sustainability in Bui-Division.

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