Relevance of New Crop Varieties and the Challenges Faced by Santa Farmers, North West Region of Cameroon

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***Abstract*: This study was designed to analyze the relevance of new crop varieties and the challenges faced by Santa farmers, North West Region of Cameroon. Primary data were collected from 115 farmers involved in the cultivation of new seed varieties using purposive random sampling techniques. Data were analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS).The results showed that 45.8% of farmers' main difficulty encountered for cultivating new crop varieties was difficulty in multiplying seeds successfully. Also, 25.2% of farmers complained of not having access to large lands needed for cultivation. Furthermore, the introduction of new crop varieties led to the gradual disappearance of local seeds which automatically changed many people's eaten habits in Santa. Despite the challenges faced, the study found that 61.6% of farmers adopted new varieties because it increased their productivity. The results equally reported that new crop varieties equally attracted and employed majority (52.3%) of the youths from towns to villages for farming.The study strongly recommends that the government and other stake holders should focus more on providing means to which farmers can be able to multiply seeds successfully. When this is done, then farmers in Santa are sure of having seeds that can be multiplied easily without incurring so much loss. Hence, this will equally help farmers from buying seeds almost every planting season.**

***Key words*: Relevance, New crop varieties, challenges, Santa Subdivision, North West Region Cameroon**

I. INTRODUCTION

With the rapid increase in the world's population, which implies many mouth to feed and income to educate children, farmers in rural areas are increasing and diversifying their production in a quest to satisfy these needs (FAO, 2000). Most farmers, especially the smallholder farmers in Africa, tend to face some challenges in the process of production and this has played a big role in affecting their yields (Magdalena, 2015). One of the solutions is to improve upon agricultural technology and the other is to improve yields through the provision of high yielding seeds (Yeyoung et al, 2017).

In Cameroon, Fonjong (2004) posits that there has been a systematic neglect of the agricultural sector and its infrastructures in Cameroon, which has resulted in agricultural production that is below the country's potential.

With all these problems faced by farmers in Africa and Cameroon in particular, new improved crop varieties were introduced by stake holders (the state, NGO's, researchers and elites) to farmers in order to increase farmers output which in return, will go a long way in helping these farmers improve on their living standards (Yeyoung et al, 2017, Amungwa, 2018).

Nevertheless, despite the introduction of new crop varieties in Cameroon, with the intention to increase food availability in the country, farmers continues to face a lot of difficulties which included seeds not being available for cultivation and are equally affected with crop pests and diseases Fontem et al, (1999).

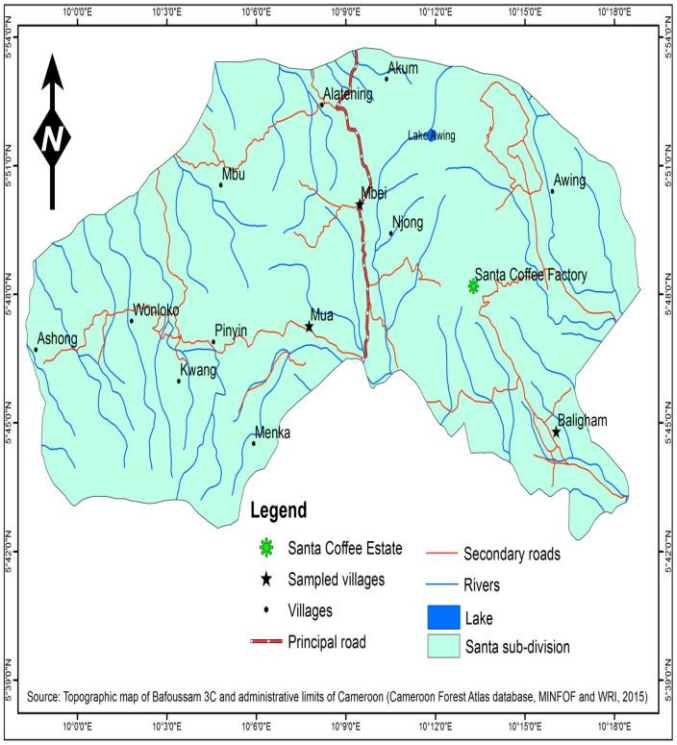
In the Western high lands of Cameroon, the importance of new crop varieties cannot be undermined as it is known to have increased the income of farmers and by so doing raises the living standards of many in the rural areas (FAO, 2009). Furthermore, the adoption of maize varieties for example in the North West Region of Cameroon, increased crop yields, food security and farmers income (Diune, (2014).

Santa is a sub-division in the North West Region of Cameroon with agriculture being practiced intensively. The fact that new crop varieties have raised incomes, raised living standards of farmers, farmers in the study areas still faced the problem of multiplying seeds successfully, even though these communities happens to be areas where a lot of new crop varieties are grown. Some of the varieties grown in large quantities included Solanum potatoes, maize and cassava destined mostly for commercial purposes. With the increasing population of Santa, which causes scarcity in land and many mouths to feed, there is the need to improve on the quality and quantity of seeds and to equally improve on the preservation techniques available for farmers. Hence, this will equally help farmers from buying seeds almost every planting season.

II. MATERIAL AND METHOD

Presentation of the Study Area

Santa is one of the subdivisions found in Mezam Division of the North West region of Cameroon. Santa is located about 12 km away to the south east of the town of Bamenda with a total population of about 99,852 inhabitants according to the last census carried out in 2008. The municipality covers a surface area of 533 square km with a population density of about 108 persons per km². In the Mezam division, Santa is recognized as one of the most productive areas. The type of climate found in Santa is the Guinean type. It is characterized by two seasons, that is the dry season which runs from November to February and the rainy season from March to November. Rainfall in this area ranges between 2000mm to 2500mm per annum, with average temperature recorded 19° C. The soils here are mostly ferruginous; ferralitic and hydromorphic rich in humus which favours the cultivation of crops especially during the dry seasons. Below is a map of the study area.



Site selection and sampling techniques

The first stage for the study was to select the site for data collection. The study selected Mua, Mbei and Baligham villages found in the municipality for data collection based on the different types of newly improved crop varieties cultivated. These villages were selected using purposive sampling techniques. The second stage involved the selection of farmers involved in the cultivation of newly improved seeds in the selected villages. These categories of farmers were determined using snowball sampling and purposive sampling techniques. The study decided to used also snowball sampling techniques because, it was discovered that some farmers could not actually accept that they were cultivars of newly improved seeds, so snowball was preferable as their colleagues refers us to others without hesitating. Lastly, the third staged involved interviews with farming groups using focus group discussion which through more lights on pertinent issues in the municipality. Targeted population was encountered on farm lands, streets and homes of farmers.

Determination of sample size

Data for this study were collected from 115 households involved in the cultivation of newly improved crop varieties. Questionnaires were used to obtain quantitative data which were shared between the three sampled villages (Baligham, Mbei and Mua), hence 28 questionnaires were administered successfully for Baligham, 52 for Mbei and 35 for Mua making up a total of 115 farmers interviewed.

Data collection

Sources of data for this study included both primary and secondary sources. Primary sources where collected on the field through the administration of questionnaires from household heads, key informants in the area and the local community. Quantitative analysis was done using Micro Soft Excel for the imputing of information and Statistical Package for Social Sciences was equally used (SPSS). Focus group discussions were equally used to collect data. While secondary data was collected from Santa Agricultural post, Santa council, thesis, relevant research reports, journals and the internet.

III. RESULTS AND DISCUSSIONS

3.1 Villages and The Main Types of Newly Improved Seeds Cultivated

3.1.1 Acid Tolerant variety (ATV) maize cultivation in Mbei village

The study revealed that there were three main improved seed varieties cultivated in Santa. These crops included: cassava, maize and Solanum potatoes. Amongst these new seeds cultivated, maize was known to be highly cultivated in Mbei village. One of the main reasons for cultivating maize in large quantities in Mbei village was that farmers mostly transformed maize into feed for the feeding of animals. Also, maize was equally cultivated in large quintiles for exports purposes. An example here was the Mbei rock farm whose main activity was to cultivate maize in large quantities for exports. **Plate 1** indicates improved maize variety called Acid Tolerant variety (ATV).

Plate 1: Improved maize variety called Acid Tolerant variety (ATV)

The ATV was usually very expensive to buy and as such most local farmers faced difficulties in purchasing these seeds. To Jill et al, (2013) one of the biggest challenges in the African maize seed sector is seed production. However, the seed variety had a very high productive value so much so that it has attracted a lot of farmers to involve in the cultivation of maize. Farmers engaged in the cultivation of such ATV, has given them much incomes so much so that these farmers were able to employ others as laborers on their farms. Through ATV, standard of living had improved in the study areas.

3.1.2 Newly improved cassava seeds cultivated in Baligham

The study equally revealed that in Baligham, the cultivation of cassava was their main cropping activity. The cultivation of newly improved cassava seeds has proven to do well more than the local seeds. To Mouafor et al, (2016) farmers that are able to obtain improved variety appreciate this variety so much because the yields are always high and are disease tolerant. But the problem here was that most women were not yet in possession of this seed because it was not available in large quantities as only few women who already had the seeds tried everything possible to multiply the seed which to them was difficult. It was proven that when the seed is planted, it gets matured quickly and becomes ready for harvest within a space of six months to one year which to these farmers was not the case with the old seeds with duration of at least two years and above before it is matured. The study equally revealed that through the cultivation of newly improved cassava seeds, standards of farmers in Baligham had increased through the sales of this crop as it was consumed directly, transformed into "waterfufu and garri".

3.1.3 CIPIRA (Solanum potato) cultivation in Mua and Mbei

Plate 2: Improved Solanum potatoes seeds (CIPIRA) spread on shelves.

This method of preserving CIPIRA seeds as shown on plate 2 was preferable to other methods because when seeds are spread on shelves, it is being exposed to sun light and air which protects the seeds from getting rotten. The seeds were being sprayed with the use of chemicals before it was kept for about two to three months after which it becomes ready for planting. Seeds were sprayed with chemicals so as to prevent insect's attack. Nevertheless, CIPIRA to some farmers was regarded as the best type of potato seed because after harvested did not get damaged easily and yields were known to be high.

3.2. Reasons for The Adoption of New Seeds Varieties by Farmers

Figure I, revealed that 61.6% of farmers adopted new varieties because they thought that it increases productivity, 20.5% of farmers adopted for pests free, 12.5% cultivated them because they were available and 4.5% cultivated because there were of low cost. Majority of farmers (61.6%) who were of the opinion that it increases productivity explained that with the new seeds, for example CIPIRA; yield much as compared to the old seeds. This is in line with Clements *et al,* (2011) who revealed that subsequent introduction of adapted and accepted varieties can potentially strengthen farmers cropping systems by increasing yields, improving drought resilience, boosting resistance to pests and diseases and also by capturing new market opportunities. The study equally indicated that 12.5% of farmers were of the opinion that seeds were available because they get their seeds regularly from the Institute of Research and Agricultural Development (IRAD) without any difficulties. The various reasons for the adoption of new seeds are found in Figure 1.

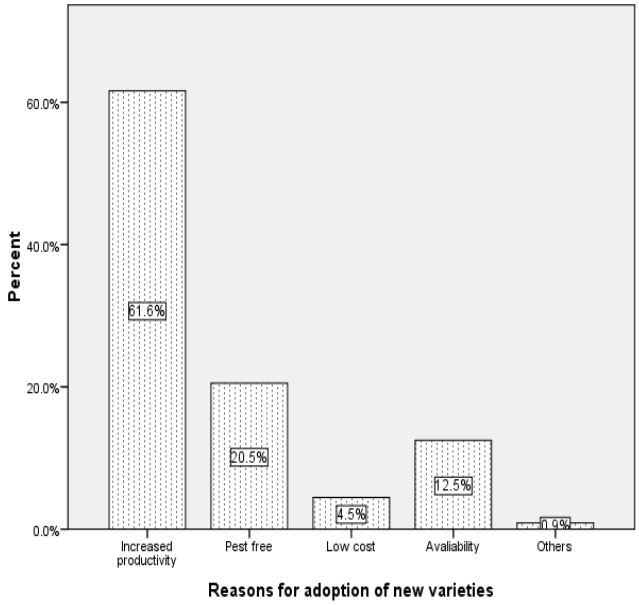


Figure I: Reasons for the adoption of new seed varieties

3.3 Reasons for Maintaining Old Seeds

3.3.1. Old seeds not expensive and still have natural taste

From Table I, about 40.9% of farmers preferred using new seeds because they were not expensive and affordable than the new ones which were found very expensive. While about 25.2% are of the opinion that old seeds have natural taste because fertilizers and chemicals were not used as when compared to the new ones. This is in conformity with Asiedu, (2014), who demonstrated that Ghanaian Farmers who grow both traditional and improved crop varieties argued that some traditional crops still have desirable traits such as good taste and ease of preservation which the improved crop varieties lack.

3.3.2 Freed from pests and diseases and do not get rotten easily

Results revealed that 31% of farmers were of the opinion that the old ones usually did not get rotten easily and were freed from weevil attack for example. Some of the farmers for instance, sited an example with cabbages by explaining that the new ones which are cultivated with a lot of chemicals and fertilizers after harvested ended up getting rotten more than the old ones which were cultivated with little or nothing at all. Some farmers maintained old seeds because they wanted to preserve their socio- cultural meals and as such they could not abandoned the cultivation of old seeds. Thus according to them, their main aim for producing new crops was for market orientation and not for home consumption. Reasons why farmers do maintain old seeds are indicated in Table I.

Table I: Reasons for maintaining old seeds

	Reasons for maintaining old seeds	Frequency	Percentage
	They have natural taste	29	25.2
	Free from diseases and pest attack and do not get rotten easily	36	31.3
	Not expensive	47	40.9
	Others	3	2.6
	Total	115	100.0

3.4 Problems Encountered by Farmers as A Result of Change from Old to New Seeds

3.4.1 Change in people's eaten habits and lack of natural taste

With the introduction of new crop varieties, farmers were so much afraid because there were no longer certain on what might happen next as they are no longer sure to protect and maintain their traditional meals. As indicated in Table II, about 51.3 % were of the opinion that new seeds did not have natural taste. Farmers tried to justify by saying that new seeds were watery, for example, *CIPIRA*.

3.4.2 Damage health

Furthermore, majority of farmers (23.5%) as indicated in Table II also complained that new crops damaged health as a result of too much fertilizer and chemicals used in cultivating these new seeds. This is in consistence with Ewa et al, (2016) who revealed that Epidemiological studies point to the negative effects of certain insecticides on children's cognitive development at current levels of exposure. Also, according to the Institute of Medicine and National Research Council Washington, (2004) conventional plant production occasionally generates foods with undesirable traits, some of which are potentially hazardous to human health. This is in line with Grossman 2006, who thinks that it is important to consider many known health risks when consuming genetically engineered foods. For example, according to Vendômois et al (2009), Clement et al, (2011) consuming genetically modified corn varieties had effects which were mostly associated with the kidney and liver and the dietary detoxifying organs.

3.4.3 Local crops gradually disappearing

Also, 13.9% of farmers thought that new seeds have led to the gradual disappearance of local crops. For example, "cocoyams" which were usually cultivated in large quantities were found disappearing in farms and in markets. This explained why cocoyams in Santa market were scarce to find and were also expensive. This has caused some changes in people's eaten habits whereby most homes have shifted from their own traditional meals to other borrowed meals.

However, the importance of new crop varieties could not be undermined as the study revealed that before the introduction of new crop varieties, so many farmers used to complain of low output but with the new seeds, they were able to harvest even doubled than what they used to have. For example, from the results obtained, about 70.4% of the farmers were of the opinion that new seeds have high productivity. While only 29.6% were of the opinion that the level of productivity was low. Difficulties encountered as a result of change from old to new seeds are indicated in Table II.

Table II: Problems encountered as change from old to new seeds

	Problems face as change from old to new seeds	Frequency	Percentage
	Damages health	27	23.5
	Changes natural taste	59	51.3
	Gradual disappearance of local crops	16	13.9
	Changes eaten habit	13	11.3
Total		115	100.0

3.5 Difficulties Encountered as A Result of Cultivating New Seed Varieties

3.5.1 Difficulties in multiplying seeds successfully

From the results found in Table III, 45.8% of the farmers were of the opinion that new seeds were difficult to multiply successfully. The reason for this difficulty was that farmers lacked the necessary means of preserving seeds. This made farmers to always buy seeds every planting season. To Renee, (2013) because the seeds are proprietary, farmers must pay royalties to use them and purchase new seeds every season, facing rising costs, and often increasing debt. Another obstacle was the fact that these seeds could not be replanted more than once as S anta farmers found it difficult to preserve while waiting for the next planting season. Also, these farmers found it difficult multiplying new seeds because these seeds were accompanied by strange diseases which made it difficult to store the seed for long period, hence, farmers had no choice but to always buy seeds which usually caused them much expenditure. This is in agreement with Clement *et al*, (2011) who indicated that cultivating new seed varieties requires much capital.

3.5.2 Seed were found rare and expensive to afford

Furthermore, those who thought that the seeds were rare and expensive to find stood for 25.2% reason being that, as new seeds were seldom distributed by the Ministry of Agriculture and Rural Development (MINADER), the beneficiaries were mostly the large scale farmers "big fish" and the consequences were that small scale farmers were left with little or nothing to multiply as seeds. Also, small scale farmers faced difficulties in having access to good quality seeds because the large scale farmers most often multiplied the newly improved seeds in their possession several times before they could allowed the small scale farmers to have access to such seeds. To farmers these seeds were no longer productive as they were mostly affected with diseases as when compared to the original ones when planted just once.

3.5.3 Pest attacks

Results indicated that with new seed varieties, farmers (17.8%) suffered a lot of pests attack on crops. This was mostly caused by the fact that seeds were of poor quality and because of that, seeds were always found damaged. These farmers complained that they used to encore so much loses also because of limited extension education available for farmers in educating them on how to go about such diseases. As a result of that, they were forced to use local methods of treating pest attacks which to them has not been all that successful. To Hall, (2003), there are several examples of introduced species that have escaped control becoming pests or agricultural weeds causing a lot of difficulties to cultivars in treating them.

3.5.4 The need for much land

Also, according to 2.8% of farmers complained of not having access to large lands needed for cultivation. This was because cultivating new seeds demanded much land and equally because the number of people involved in farming were high with no corresponding farm lands. For example in Mbei, some of the workers had become farm owners as lands were given to them by their masters in order to show appreciations for job well done and by so doing; the number of hectares of land which were supposed to be owned by a farmer has been reduced.

3.5.5 Seeds need much capital

Cultivating new seed varieties need much capital as indicated in Table III. This was due to the fact that demands for seeds were high as majority of the farmers were found wanting to cultivate new seeds. But the problem farmers were mostly faced with was how to generate capital to invest in such activity. To these farmers the few banks available for them to loan money were not helping matters as they were known to levy high interest rate to farmers. For this reason, the few farmers who had large portions of land were unable to cultivate on all the lands, hence leading to low output**.** Table III shows the difficulties encountered by farmers in the cultivation of new crop varieties.

Table III: Difficulties encountered by farmers in cultivating new crops

Difficulties encountered	Frequency	Percentage
Difficulty to multiply seeds successfully	58	45.8%
Seeds are rare and expensive	40	25.2%
Pests attacks	10	17.8%
Seed need much inputs	5	8.4%
Need much land	2	2.8%
Total	115	100.0

3.6. Farmers Benefits from The Adoption of New Seeds

Figure II, indicated that the introduction of new crop varieties has created new employment opportunities to the people of Santa with a percentage of 62.3% rang as the highest, source of food 21.9%, income to the council 8.8% and for research 6.1%. Also, results revealed that cultivating new crops has occupied a lot of youths on the streets thereby reducing crime rates and poverty. This is also in conformity with (Allah 2015), who thinks that rural development is a vital component of fighting global poverty and eradicating human dependency in other countries or communities. For example, the study revealed that farm workers were able to earn at least 2000 FCFA per person each day they go to work on farms. Furthermore, the cultivation of new crop varieties had attracted many youths from towns to villages to carry out cultivation as yields were known to be encouraging. With income realized from farming, many of them were able to provide for their families, built houses and hotels, opened provision stores, able to pay their workers and maintain farms without any problem. All these put in place gave the study area a new look.

Furthermore, new crop varieties have employed more bike riders in the area because farmers needed more motor bikes to transport their farm inputs such as manure, fertilizers, seeds and laborers to the farms, especially farms with long distances. Also, with the cultivation of new seeds which demanded more of intensive and irrigation farming, led to rural development in this locality. This was seen in cases where by more stores were opened for the sale of farm inputs such as manure, chemicals and fertilizers.

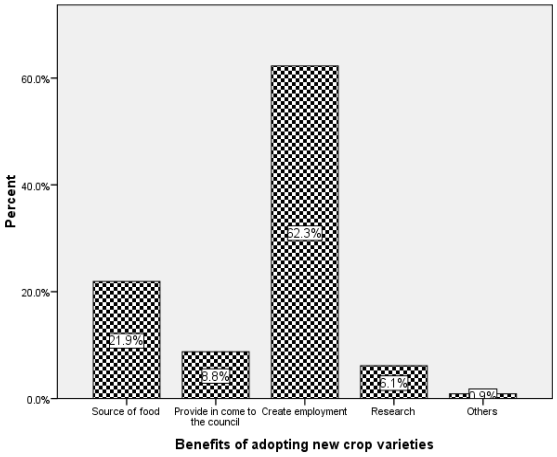


Figure II: Benefits from the adoption of new crop varieties

IV. CONCLUSION AND RECOMMENDATIONS

Conclusion

The study revealed that with the introduction of new crop varieties, farmers found it difficult to multiply seeds successfully. Cultivating new seeds, had led to the introduction of many diseases which today damages health. Equally these new seeds were found expensive and less available for farmers. Also, the introduction of these new varieties led to changes in people's eaten habits and the gradual disappearance of traditional meals. However new crop varieties has brought a lot of development to the people of Santa sub division, North West Region of Cameroon. This development was seen in various domains: at the level of employment, more than 70% of youths were employed through farming. Also through the cultivation of new seeds, it has attracted many youths who used to be in towns for greener pastures came back home and invested in crop production as it had fetch them a lot of income. Furthermore, new crop varieties have really reduced the rate of crimes in the town of Santa as many were seen engaged in one agricultural activity or the other.

Recommendations

To the Government

MINADER and IRAD should speed up the paste at which new seeds are being distributed and to ensure that each and every farmer benefits from these new seeds. Equally, advanced preservation techniques should be provided to farmers to help them multiply seeds successfully. Furthermore, more subventions and loans should be given to farmers so that they can better maintain their farms.

To the farmers

Farmers should be able to reduce the quantity of chemicals and fertilizers being used in their farms and when spraying, they should protect themselves from contracting diseases by using nose masks and hand globes and when this is done their health **is assured.**

To the NGO

They should be able to provide farmers with more long lasting agricultural projects that will benefits farming group associations which will bring more development to the agricultural communities.

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