Journal of Agricultural Economics, Extension and Rural Development: ISSN-2360-798X: Vol. 2(6): pp 085-093, June, 2014.

Full Length Research Paper

Mideno's schemes as agent of rural agricultural development: the case of maize production in Mezam division in Cameroon

[1]Njimanted Godfrey Forgha, *[2]Mbohjim Othniel Mobit and [3]Dinah Gembom Phungeh

[1]Associate Professor of Economics, University of Buea, S.W.R, Cameroon
[2]Lecturer of Agricultural Economics, University Institute of the Diocese of Buea
[3]Lecturer of Finance, Management Science, Catholic University of Cameroon, Bamenda

Corresponding Author's Email: mobitothniel@yahoo.com

Accepted 30th May, 2014

As African policy makers strive to attain Food Security and alleviate poverty by 2015, Maize was highlighted as one of the main crops through which agricultural production policies could be effective – *"BIOMASS"*. It is in this light that MIDENO's schemes of Micro credit and agricultural education of 2005 under (GP-DERUDEP) become central in rural transformation for sustainable production. Thus, the study examines MIDENO's schemes by a random survey of 250 farmers who participated under the Grass Field Participatory and Decentralised Rural Development Project (GP-DERUDEP). The inaccurate nature of farm records necessitated the adoption of the multinomial logit estimation technique from which the study investigates the influence of MIDENO's schemes on rural productivity and transformation. It is found that, the micro loans and agricultural educational scheme contributed significantly to the rural transformation but the rate of change in levels of production is impeded by the conservativeness of farmers in adapting to the present challenges towards food security. Thus, the study recommends a more sustainable training of agriculturist in a complete curriculum as a sustainable solution. MIDENO should train farmers on writing sustainable agricultural projects that fetch real funding.

Keywords: Zero waste principle, micro credit, broad-based agricultural project, sustainable production, agro-ecological farming practices, *"Biomass"*

INTRODUCTION

Maize production is seen as a crop through which food security and poverty alleviation could be achieved in Africa given its fast growth rate of 2.8% per annum as compared to the world growth rate of 2.5% (FARA, 2009). The Central African sub regions of Africa had the highest growth per annum between 1986 and 2006 of 4.38% (FARA, 2009). With this figure African countries have been encouraged to boost Maize production as one of the ways to achieve the objective of Food security and halving poverty in the continent by 2015. Agricultural policies have had several phases but with short term objectives. In the 1950s, agricultural policy most often was limited to assists in the increase yields in the developing economies with little or no processing or value added. Smale and Mahoney (2010) recounts that over the last 50 years, expansion of irrigated land and widespread adoption of new seed varieties and fertilizers in both rich and poor countries have resulted in increase agricultural productivity which outstripped world population growth. Based on the above, global food prices witnessed declined especially in staples of rice and wheat. Also, this was the case for new livestock

breed with veterinary drugs, blended feeds with nutrients additives. It is on these premises that some experts argue that many opportunities of intensifying inputs based production have been exploited already and advanced cutting-edge science in advanced research institutions needed to be redirect towards the practical problems of poor farming communities.

MIDENO's credit scheme has targeted farmers with the objective of providing support in terms of intensified input procurement and microcredit for special crop production with some level of value adding projects. However, she has rarely seemed the broader based agricultural value adding projects founded on the zero waste principle. This is because the traditional view of agriculture for increases yields has made it lost its value in the value chain of growth in developing economies as the means and methods of production were still under mechanised (crude) and not research based. This most often has placed agricultural as a "Third class" profession and synonymous to "developing countries Occupation" especially for the sole purpose of producing raw material for formal colonial masters with more than 60% of the developing countries' population depending on it. This gives a better insight to Africa's vulnerability to prices change of tradable especially in the world market. Fulginiti and Perrin, (1998) observe that the decline in agricultural productivity from 1961 to 1985 in most African economies was strongly associated with world agricultural price falls but suggested that the use of fertilizer and machinery in agricultural production have the tendency of reversing the situation. Consequently, the proposed policy recommendation of broadening of the export base under the Structural Adjustment Programme (SAP) was myopic as agriculture for raw material production and subsistence did not include the broad scope and understanding of agriculture in these African countries. It is on this premise that this work accentuates the scope of agriculture as a Biological Mass with a much broader scope-"*Biomass"*.

Agriculture from the perspective of *Biomass* encompasses; fishery, agro forestry, mining, crop and animal production, horticulture and ecotourism for broad base growth of African nations otherwise contextualised as sustainable development. Going by the ways, methods and value attached to agriculture, most youths in Africa in general and Cameroon in particular are not interested in the profession. This has motivated growth rates of rural exodus in search of "First Class Jobs making the agricultural population in developing economies to be dominated by an ageing population with low agricultural productivity skills, low learning potentials as farmers are very conservative with low levels of productivity and poor margins which makes agricultural loans very risks for financial institutions. It was on the bases of this that Balogun and Yusuf, (2011) advised that rural development agents are needed to encourage social capital through groups as it significantly influences the amount of micro credit available at different sources after investigating the determinants of micro credit among rural households in the South-Western States of Nigeria.

However, given the impressive agro-ecological and the diverse socioeconomic conditions as well as the fact that agriculture in Africa is rain-fed, the Inter Academy Council (IAC) recommended a production ecological approach to diagnose problems and find solutions in the four most promising farming systems of Africa which includes (1) the maize-mixed system, including cotton, cattle, goats, poultry, and off-farm work; (2) the cereal/root crop-mixed system, based on maize, sorghum, millet, cassava, yams, legumes, and cattle; (3) the irrigated system, based primarily on rice, cotton, vegetables, rain-fed crops, cattle, and poultry, and (4) the tree crop system, based primarily on cocoa, coffee, oil palm, rubber, yams, maize, and off-farm work. This is because these farming systems show the potential of food security and broad based agribusiness integrated research driven projects based on the zero waste principle. It is in this light that MIDENO's agricultural schemes of micro credit and agricultural education is assessed. Increase yield is poorly perceived in Africa especially with the usage of soil upgrades as the dosage is often neglected due to lack of research and soil analysis. Also, high cost and low agronomic efficiency makes the use of inorganic fertilisers unprofitable for African farmers. That is why in 2002 the average intensity of fertilizer use in Africa was 8 kilograms per hectare of cultivated land (FARA, 2009).

The problem of yield maximisation in Africa necessitated several studies which justified that fertilisers do not increase yields in soils as such an integrated organic approach using manure from livestock or post-harvest crop waste to improve on soil carbon was recommended. Among such studies are those of Binswange and McCalla, 2009, Smale and Mahoney, 2010. Furthermore, over the last two decades evidences have accumulated in favour of agro-ecological farming practices on marginal or intensified farming lands. Most often these restorative approaches have yielded results in Burkina Faso, Zambia, Kenya based on participatory research by community-based organisation in collaboration with local Non Governmental Organisation linking farmers to researchers. The break from micro credit for subsistence food production will only come true when farmers move away from the traditional thinking that crop production is synonymous with food

production. Crop and animal production is synonymous to an array of input for other manufacturing product such as, food products and sustainable energy production - (agro-industrialisation) which are environmental friendly and rooted in the new philosophy of "*Biomass"*.

This is controversial as most African countries still suffer from food insecurity and malnutrition. However, these African countries do not have food insecurity as a problem per actually, but low knowledge on the productive potentials and methods of production given the agro-ecological system especially as land production potentials can be modelled using the Geographical Information System like the case of Maize in the North West Region of Cameroon (Van Rans, Scheldeman, Van Mechelen, Van Meirvenne and Kips, 1993). This is because the Food and Agricultural Organisation of the United Nations cannot feed these people for a life time but can create a local sustainable agribusiness system that can sustain the communities via a better understanding of the agricultural resources. This in actual fact goes to sustain the argument that local rural development agencies are necessary for a sustainable agricultural system and rural development in Africa. This premise justifies the existence of rural development agencies like MIDENO and SOWEDA among others in Cameroon. However, their survival is questionable in the face of a changing rural world given that rural maize production like other farm products are dominated more by ageing population with relative low productivity and high competition from the developed economies with its highly mechanised agriculture which is research driven from the perspective of "*Biomass"*.

This perception of agriculture resulted in high yields and reduction in world prices for rice and wheat downward (Smale and Mahoney, 2010). This justifies the growth in Africa's imports of maize of 76 percent (about 6.87metric tons) between 1995 -1997 as well as some 12 metric tons between 2005 – 2007 in which Africa spent US$1.14 billion dollars and US$2.25 billion respectively and her receipt dropping from US$350 million – US$264 million (FARA, 2009). This actually explains the competition that Cameroon and other African countries producing rice, wheat, maize, cocoa and coffee face as most of their productions are inadequate or have low quality and are rejected in the world markets. Consequently, defaulted loans are inevitable especially as the Director General of MIDENO highlighted that over 40 percent of loans had not been recovered in 2006. Therefore, in order to address the problem of low yields in maize production and delinquent micro loans in the rural areas of Mezam Division given all the enormous potentials, this study is designed to provide sustainable solutions by assessing the efficiency of MIDENO support programme on sustainable rural development by answering the following research question:

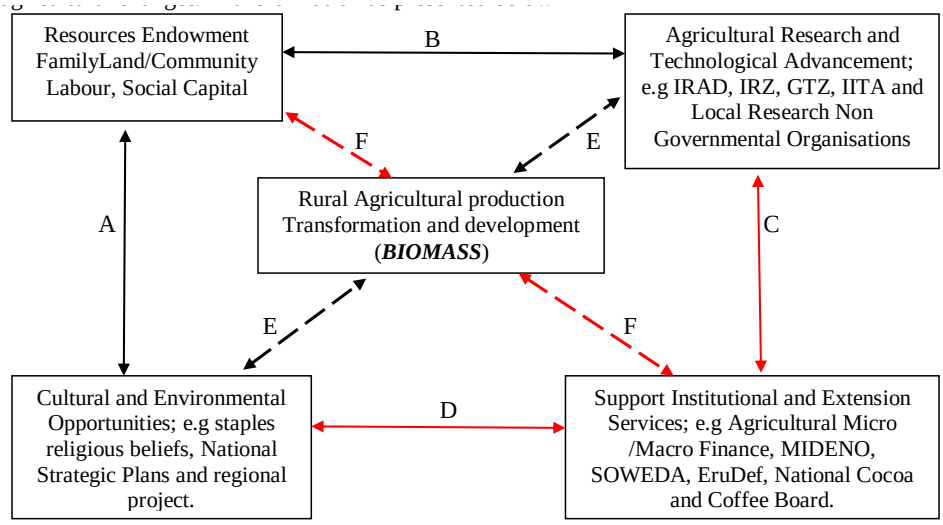
a. How effective are MIDENO's agricultural support programme in sustainable maize production in Mezam Division in Cameroon?

Based on the above question, this work is designed to assess the efficiency of MIDENO support programme on sustainable rural development taking Mezam Division in Cameroon as our case study. Specifically, the study is out to evaluate the impact of MIDENO's farmers' support services for sustainable maize production in the rural areas of Mezam. In order to provide a sustainable solution to the problem of low maize valued yields or low level of value added based on the zero waste principle in the rural areas of Mezam Division. To achieve the above objectives, this paper has been divided into five sections. Section II reviews some existing empirical and theoretical literatures. Section III focuses on the analytical methodology while section IV presents a comprehensive discussion of the results. Section V draws the work to logical conclusion through summary of major findings and policy remarks.

Theoretical literature

Roth (1997) tried showing how limited microcredit could be as a rural development intervention emphasising the effect of the political framework in which these micro credit schemes are operating and showing Africa's weak bargaining power at the global level. Navajas. S, M. Schreiner, R. L. Meyer, C. Gonzalez-Vega, and J. Rodriguez-Meza, (2000) used the Wilcoxon rank-sum tests for differences in medians and the non-parametric Kolmogorov-Smirnov tests for differences in the distributions to assess the depth of some five microcredit outreach schemes to emphasise that those who get as to these microloans are those who are near the poverty line. This sets the platform for Balogun and Yusuf, (2011) who used multinomial logit method estimation to determine the demand for microcredit by rural households and emphasised social capital be encouraged among rural households.

(Fulginiti and Perrin, 1998) use a nonparametric, output-based Malmquist index and a parametric variable coefficients Cobb-Douglas production function to verify the findings of previous studies that there was declining agricultural productivity trend in LDCs from 1961-1985. Although they tied it to fall in world prices of agricultural product, still they highlight the contribution of research driven production with the contribution of machinery and fertilizers not over emphasized in some parts of the



Source: Olayide et al (1981) augmented by authors

Figure 1: Forces for Rural Agricultural Transformation

world which had a growing trend in agricultural productivity. Also, the U.S. Department of Agriculture, Economic Research Service (1999) has put together agricultural productivity indexes to justify the role of research and development in the success of America's agricultural productivity from 1948 – 1996 and concluded that research significantly contribution to increase productivity.

Ndenecho and Akum (2009) asserted that micro financing is the panacea for food security and alleviation of rural poverty and concluded that micro finance had a positive impact on rural yields but an insufficient impact on agricultural development. So in addressing the insufficiency of micro credit and support programmes as prescribed by the above mentioned studies this work incorporate new factors that influences the efficiency of agricultural productivity such as farmers open mindedness and farm experience

Agriculture most often had been considered the main economic activity of the people of the developing countries and for almost half a century the quest of these developing countries has been increased yields. Hybridisation and other forms of intensification was propagated and adopted. These polices to some extend increased yields but the world trend of decreasing world prices for the staples of wheat and rice is not the case in most African countries. Most studies blamed this on partial policy implementation, weak institutions, lack of productive investments, coordination failure, state failure, high service delivery cost, poverty/soil-fertility trap, trade liberalisation and agricultural skeptic (Dorwards et al, 2009).

Today the most recurrent problems run from the growing rate of desertification and famine, food and alternative uses of produced crops such as biofuel and biogas which makes must pessimist to advocate against the view that agriculture is synonymous to "*Biomass"*. This remains a myopic views as most of the produce of these developing countries especially in Africa cannot compete in the world market due to subsistent production with poor methods of production, conservation, processing packaging and marketing.

From the framework of forces for rural agricultural transformation, agricultural is broadly seen beyond just increase food production, to an array of Biological Mass - "*Biomass"* which serves a broad based agricultural production function for sustainable rural development. Agriculture builds from the cultural and environmental opportunities given the so many dynamics; (religious and cultural beliefs, national strategic Plan and regional development projects) that surround agricultural resource endowment of land, labour and capital – movement along "A" as presented in figure 1 above.

Borrowing from Olayide et al (1981) we upgrade the framework; Forces leading to rural agricultural changes/ Transformation as presented below

This now sets the platform for agriculture to be defined as subsistence crop production. It necessitates research for more resistance and high yield breeds and species therefore integrating agricultural research and

technological innovations. The outcome of this agricultural research most often in developing countries ends up on offices desk due partly to the dogmatism of cultural and environmental behaviours and this has influenced the scope of the definition of agriculture. This has also accounted for the poor yields in Africa despite the huge research and recommendations of intensification (Smale and Mahoney, 2010). Years of crop production without replacement based on Lipid Law of Minimum, affects the Labour force structure and productivity and creates some vicious cycle of low yields. This results in defaulted loans leaving social capital to salvage the situation.

This vicious cycle of low yields is the bidirectional movement along "A", the bidirectional movement along "B" but a reverse unidirectional movement along "E" from cultural and environmental opportunities back to agricultural research and technological advancement is proposed. It is from this point that the anti-vicious cycle of low yield is integrated with support institutions and extension service where the research recommendations are channelled and resource endowment are managed efficiently through proper farming training programmes like the (GP-DERUDEP) project from a broad based sustainable production project perspective seeing increased yield as a Biological Mass "*Biomass*" (Dorward et al, 2009). Through these services too, the cultural and environmental opportunities are modified and the vicious cycle of low yield is broken as agricultural credit schemes are guided for specific agricultural projects that are closely monitored, movement along C, D and F. It is on the bases of this that the analytical method of the work examines the MIDENO's microcredit and educational scheme for maize production in Mezam Division of Cameroon.

ANALYTICAL METHODOLOGY

This work adopts a survey research design, precisely the Expost Facto research design as a systematically selected sampled of 250 registered MIDENO farmers (participants) of Grassfield Participatory and Decentralised Rural Development Project (GP-DERUDEP) aimed at poverty alleviation were sampled. This project co-funded by the Government of Cameroon, the African Development Bank (ADB) and the beneficiary communities among which Mezam Division is found. This was the third Rural Development project funded in the North West Region of Cameroon after the North West High Plateau Rural Development project (phase 1) 1982-1989 and the North west High Plateau Rural Development project (phase 2 reformulated) of 1999-2002. (Both referred to as MIDENO 1 and MIDENO 2-R).

GP-DERUDEP had as an objective to contribute to poverty alleviation in the rural areas of the North West Region through increasing the incomes of rural farmers by increasing agricultural output and improving their socio-economic environment. In order to evaluate the impact of this rural development projects, 250 systematically selected sample units (farmers) were administered questionnaires after a pilot survey. The study used a transformed augmented Cobb Douglas production function. On the field, it was noted from the pilot questionnaires that most farmers did not keep adequate records of their returns on yield, expenditure on farm equipments, labour cost, expenditure on farm inputs such as hybrid seedlings, fertiliser or compost and also given other qualitative variables such as age, sex and farming training and the interaction of age and farm training. Paramount to the justification of the method of estimation was the fact that this study sees agriculture from the broad based project which accounts for the differences in returns on yield and the multinomial Logit method of estimation was found apt to estimate the impact of the microcredit on returns on yields.

250 farmers were randomly sampled for the over 956 farmers registered with MIDENOs schemes constituting about 26 percent of the population coverage. The farmers were divided across the 5 subdivisions of the Mezam Division and a frequency weight used to simulate a sample of 660 which was representative of the over 956 farmers registered under the MIDENO's schemes of GP-DERUDEP. The output of the farmers were categorized between 1 – 13 tonnes divided into five categories of 13tonnes and denoted as $Y_i = 1$ or 0. The probability of observing the various output values of $f(Y_1, Y_2, Y_3, Y_4$ and $Y_5)$ is given as

f (Y_1, Y_2, Y_3, Y_4 and Y_5) = $\prod_1^{250} f_i Y_i = \prod_1^{250} P_i^{Yi}$ (1 – *Pi)1–* *Yi*

Where,……3.1

P_i is the probability of having $Y_i = 1$; $(1 – P_i)$ is the probability of $Y_i = 0$

Transforming this Likelihood function (LF) into a log likelihood function (LLF):

We obtained, $\ln f(Y_1, Y_2, Y_3, Y_4$ and $Y_5) = \sum_1^{250}[Y_i \, lnP_i + (1 - Y_i)\ln(1 - P_i)]$

$= \sum_1^{250}[Y_i \, lnP_i - Y_i ln(1 - Y_i) + \ln(1 - P_i)]$ …….3.2

$= \sum_1^{250}[Y_i \, ln\left(\frac{P_i}{1-P_i}\right) + \sum_1^{250} \ln(1 - P_i)]$

Equation (3.2) can be modified to

$= (1 – Pi) = \frac{1}{1+ e^{\beta_1 + \beta_2 X_i}}$……3.3

which when transformed using the natural log end up as

$= ln\left(\frac{P_i}{1-P_i}\right) = \beta_1 + \beta_i X_i + \varepsilon_{it}$ 3.4

Substituting (3.3) and (3.4) into the log likelihood function (3.2)
We have;
$\ln f(Y_1, Y_2, Y_3, Y_4 \text{ and } Y_5) = \sum_1^{250} Y_i (\beta_1 + \beta_i X_i) - \sum_1^{250} ln [1 + e^{\beta_{1+} \beta_i X_i}]$ 3.5
Where, *βi* are the estimated coefficients or parameters,
Xi is the vector of the inputs variables among which include land (Ln) in hectares, labour expenses (L), Capital equipments expenditure in XAF (k) , loans in XAF (cr), materials for intensification based on level of expenditure in XAF (ma), age of the farm owner (ag), sex of farmers (sx), levels of agriculture educational attainment (Ed), with level of openness toward agricultural techniques obtained by an interaction between educational attainment and age, (Educage) and finally the nature of farming such as shifting and bush fallowing (Natfarm), farm experience based on the number of years, squared of farm (Fexp).

The a priori expectations of the various variables are justified theoretically from the Cobb Douglas production function and other theoretical underpinning where the contribution of Labour and capital are expected to be positive, land, material (fertilizers and hybrid seeds) are expected to have a positive contribution to productivity, age and sex has a positive relationship, farm experience has a positive relationship, method of cultivation and education has a positive relationship, openness to new techniques of production has a positive relationship as well as nature of farming. The measurement of the variables of this study are very crucial given that the estimated parameters aimed at explaining the differences in the valued yield levels are stratified it into five categories and denoted as (q). The values of the plots of land were categorized into 3 categories, labour expense, capital expense on; (hoes, machetes, planters, wheel barrels or trucks), ages cohorts were categorised, sex made up of the male and female, method of cultivation and level of education were also categorised. Central to this study is the variable of openness to new agricultural concepts especially on the principle of zero waste. It is that variable that actually makes for the difference in maize valued yield among the sampled maize farmers under the MIDENO's (GP-DERUDEP) project

Presentation of empirical results (Table 1 below).

Analysis of Results

Based on the results above, a hectare increase in arable land increases the probability of having between 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes of maize by about 152, 19.6, 11.7 and 16.9 percent all against the base category of less than 2 tonnes of maize. However of all the increased probability of belonging to the various maize output or yield categories, just the 152 percent increase in maize yields in the category of 2 – 4 tonnes resulted from a hectare increase in arable land is statistically significant.

A 1000XAF increase in farm labour expenses results in about 5.5, 9.6 percent increase for the first two categories but in the third category results in about 4.8 percent decrease in but results in about 304 percent increase in the probability of belonging to the maize output category of 11 – 13 tonnes all against the base category of less than 2 tonnes.

A 1000XAF increase in small and medium scale capital or transport cost, results in 72.8 and 14.4 percent increase in the probability of belonging to the 2 – 4 and 8 – 10 tonnes category of maize output or yield respectively but reduces the probability of belong to the 5 – 7 and 11 - 13tonnes category by about 53.2 and 35.5 percent respectively all against the base category of less than 2 tonnes.

A 1000XAF increase in the micro credit reduces the probability of belonging to 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes of maize output or yield categories by about 60.8, 55, 35.6 and 67.9 percent respectively all against the base category of less than 2 tonnes. These probabilities are all statistically significant at 1 percent α – level.

A 1000XAF increase in materials expenses for intensification such as improved seeds and pesticides increases the probability of belonging to 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes of maize output or yields by about 87.2, 24, 6.3 and 152.9 percent respectively all against the base category of less than 2 tonnes. Of all the respective probabilities just the probabilities of the 2nd, 4th and 5th categories are statistically significant at 1 percent error margin or α – level. A year increase in the age of the farmers increases the probability of belonging to the maize output or yields of 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes by 177.1, 9555.1, 15.85 and 7512.7 percent respectively as against the base category of less than 2 tonnes. Of all the respective probabilities just the probabilities of the 2nd, 3rd and 5th categories are statistically significant at 1 percent error margin or α – level.

An increase in the male gender of farmers reduces the probability of belonging to the maize output or yields of 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes by 40.8, 17.6, 47.4 and 47.9 percent respectively as against the base category of less than 2 tonnes. Of all these probabilities

Table 1: Presentation of econometric results estimated using the multinomial Logit technique

Variables	Ouput < 2 Tons Base Outcome	Output 2 – 4tons (RRR)	Output 5 – 7tons (RRR)	Output 8 – 10tons (RRR)	Output 11 – 13tons (RRR)
Ln		2.521***	1.196	1.1174	1.1685
		(0.000)	(0.212)	(0.410)	(0.311)
L		1.055	1.957	0.950	4.0403***
		(0.892)	(0.104)	(0.893)	(0.002)
K		1.728***	0.368***	1.1440	0.645***
		(0.002)	(0.000)	(0.336)	(0.008)
CR		0.392***	0.450***	0.644***	0.321***
		(0.000)	(0.000)	(0.01)	(0.000)
MA		1.872***	1.240	1.063***	2.53***
		(0.005)	(0.287)	(0.01)	(0.001)
AG		2.771***	96.551***	1.1585	75.127***
		(0.003)	(0.000)	(0.602)	(0.000)
SX		0.592	0.8242	1.474	0.521***
		(0.123)	(0.539)	(0.210)	(0.055)
ED		2.366**	82.259***	1.28711	80.638***
		(0.032)	(0.000)	(0.436)	(0.000)
EDUCAGE		0.583**	0.016***	0.921	0.017***
		(0.029)	(0.000)	(0.640)	(0.000)
NATFARM		1.008	1.1478	1.0869	1.0510
		(0.981)	(0.654)	(0.778)	(0.881)
FEXP		99.996**	137.19***	155.962***	100.349***
		(0.000)	(0.000)	(0.000)	(0.000)
Observations	660				
Wald chi2 (44)	7222.28				
Prob > chi2	0.0000				
Pseudo R^2	0.2017				
Log pseudo likelihood	-825.19724				

Source: Field Results 2013 (Computed by authors using stata 11)
The P > |z| indicates the level of significance of the estimated coefficients: ** significant at 5% and *** significant at 1%.

just the probability of the 5th maize output or yield category is statically significant at 1 error margin or α – level.

A training session for farmers increased the probability of belonging to maize output or yield category of 2 – 4, 5 – 7, 8 – 10 and 11 – 13 tonnes by about 136.6, 8125.9, 28.7 and 7963.8percent respectively as against the base category of less than 2 tonnes. However, just the increased in the probabilities of the 2nd, 3rd, and 5th categories are significant as at a 1 percent error margin or α – level

The previous variable of farmers training sessions can be seen in the level of the opened mindedness of the farmers captured by an interaction of both age and level of education. Given that level of education enables a level of understanding of any body of knowledge with age farmers tend to develop the strength element of a farming culture with either makes them hold firmly to it or try to improve on it. This is the element captured by the open mindedness of farmers or the level of conservativeness. Thus, a year increase in this conservativeness reduces the probability of belonging to all the maize output or yield categories by 41.7, 98.4, 7.9 and 98.3 percent respectively. However, of all the reduced probability of belonging in the various categories, just the probabilities of the 2nd, 3rd, and 5th categories are statistically significant at 1 percent. The results is the pivot of this study as it is premises on the sustainability of training programmes for farmers and the micro credit scheme given that conservativeness reduces the efficiency of the various schemes.

Farming experience is a major element on which rural development agents should build on as a year increase in the farmer's experience in the cultivation of maize largely increases the probability of belonging to the various maize output or yield by about 9899.6, 13719, 15596.2 and 10034.9 percent respectively as against the base category of less than 2 tonnes. Furthermore, these

probabilities are all statistically significant at 1 percent. The estimation of the variable on farmers conservativeness is where the change of the 21st century agriculture in Cameroon lies as most farmers are reluctant to adopt new methods of intensification or see maize production beyond food production especially as concerns alternative uses of energy production – BIOGAS or BIOFUEL. It is on this ground that the case of this study is elucidated.

SUMMARY OF FINDINGS

Based on the quantitative results above, most parameters estimated are statistically significant at 5 and 1 percent. Cardinal to this study are the variables of Micro loans (Microcredit), agricultural educational schemes/programs of MIDENO under the (GP-DERUDEP) project. The implication of the activities of MIDENO as a rural development agency in its quest to meet up with the changing of rural setting, other variables such a land value, labour, capital and material expenses, sex, age farming experience and conservativeness of farmers were used to underscore the dynamics involved in rural transformation. As such the estimated parameter of micro loans and agricultural educational schemes/programs significantly influence the probability of having low or higher post harvest yield. However, micro credit or loans reduces the probability of having higher post harvest yield while agricultural educational programmes increases the probability of having higher post harvest yields. This is complemented by the results that conservativeness of farmers as it reduces the probability of having higher post harvest yields while farm experience play a key role in increasing the probability of having higher yields.

POLICY RECOMMENDATION AND CONCLUSION

Based on the findings of this study the path for wisdom reveals that:

i. Agricultural educational programmes run by MIDENO should be a well structured continuous programme which keeps the farmers in close contact with new knowledge and solutions to the problem such as usage of fertiliser, usage of more resistant seedlings, as well as the complexity of the world market due to the regulations by the Food and Agricultural Organisation of the United Nations. This can be achieved through the training of maize farmers on project development so that they can secure better funding especially for priority projects such as maize for purpose of food insecurity and self sufficiency in Africa.

ii. Funds for rural agricultural transformation may be very inefficient when distributed in piece meal to farmers as it is not be able to really support farm research of even farm mechanisation that is why most of the micro credits are easily defaulted. The benefit of farm mechanisation is economy of scale. This is not by farmers to buy machines but benefit from the services of the machine made available by the MIDENO so that they productivity could increase. It should be noted that well structured agricultural projects fetch really funding especially when they are in line with the objectives of international organisation like the New Partnership for African Development of the African Development Bank (NEPAD – AfDB). By this, farmers should be encouraged to group themselves in which case they would have access to more land, loans and ideas need for broad base crop production – Biomass.

iii. A more sustainable solution is investment in a younger generation of agriculturist who will easily accept the changing pattern of agriculture and revamp the sector especially in the areas of maize production through broad based maize project for alternative uses such as food and sustainable energy production principled on zero waste. The present government project of training a new generation for farmers via the 34 training centres created in rural and urban areas of Cameroon may be unsustainable if it is not research driven just like the present day IRAD which is facing out due to its low level of research orientation and inadequate funding.

REFERENCES

Andrew RD, Johann FK, Were SO, Colin P, Nick V (2009). Institutions and the Agricultural Development Challenge in Africa. Washington D.C: International Food Policy Research Institute.

Balogun OL, Yusuf SA (2011). Determinants of demand for microcredit among the rural households in South-Western States, Nigeria. J. Agric. Soc. Sci.7:41–48

Binswanger-Mkhize, HP, Alex FM (2008). The changing context and prospects for agricultural and rural development in Africa: A Working Paper from the joint evaluation of AfDB and IFAD policies and operations in agriculture and rural development in Africa

FARA (Forum for Agricultural Research in Africa). (2006). Framework for African Agricultural

Productivity / Cadre pour la productivité agricole en Afrique. Accra, Ghana. p.72 .

Fulginiti LE, Perrin RK (1998). Agricultural productivity in developing countries Faculty Publications: Agricultural

Economics. Paper 17. http://digitalcommons.unl.edu/ageconfacpub/17

GP-DERUDEP (Grass field Participatory and Decentralised Rural Development Project), (2006). Baseline study of the Northwest Province. Bamenda, Cameoon: (SIRDEP)-Cameroon.

Navajas SM, Schreiner RLM, Gonzalez-Vega C, Rodriguez-Meza J (2000).Microcredit and the Poorest of the Poor: Theory and Evidence from Bolivia. World Development, 2000, 28(2): pp.333-346.

Ndenecho EN, Akum HK (2009). Spatio-temporal Analysis of Micro Financing for Agricultural Innovation Diffusion in Mezam Division in Cameroon. International NGO Journal Vol. 4 (3), pp. 057-065, March, 2009. http:// www.academicjournals.org/INGOJ

Olayide, SO et al (1981). Elements of Rural Economics. Ibadan: Ibadan University Press Publishing

House, University.

Roth J (1997). The Limits of Micro Credit as a Rural Development Intervention. Institute of Development Policy and Management Manchester University, Manchester.

Smale M, Mahoney TM (2010). Agricultural Productivity in Changing Rural Worlds. A Report of the CSIS Task Force on Food Security: Washington D.C, Center for Strategic and International Studies

United States Department of Agriculture, Economic Research Service (1999). USDA Economics and

Statistics System: Data Sets. “Agricultural Productivity in the U.S. (98003)” National Productivity Accounts and Implicit Price and Quantity Indexes for Agriculture, 1948-1996 and State Productivity Accounts, 1960-93, Accessed April 1999. http://usda.mannlib.cornell.edu/data-sets/inputs/98003/.

Van Ranst E, Scheldeman’, Van Mechelen’ L, Van Meirvenne M, Kips Ph (1993). Modelling the Land Production Potential for Maize in North-West Cameroon Using GIS. Gent: University of Gent, Belgium.