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CONSTRAINTS AMONG RICE FARMERS UNDER THE MiDA AGRICULTURAL CREDIT PROGRAMME IN THE HOHOE MUNICIPALITY

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Abstract: **The study investigated the agronomic constraints among rice farmers under the MiDA in the Hohoe Municipality. Primary data was collected from 120 farmers from 4 beneficiary towns while secondary data was gathered from literatures and various organizations. Multistage random sampling technique was used to select the respondents. Obtained data were analyzed using Kendall's coefficient of concordance. Results showed that the five topmost constraints faced by farmers include: poor climatic conditions, high incidence of pests, poor yield, high cost of inputs and problem of poor milling equipment**

Keywords: **Constraints, Hohoe Municipality, Kendall's coefficient of concordance, MiDA, Rice Farmers.**

I. INTRODUCTION

According to World Bank (2010), about 70 percent of the world's poor live in rural areas and mostly depend on agriculture as the main source of income and employment. Agriculture constitutes the largest sector, contributing more than 30% to gross domestic product (GDP) and foreign exchange earnings for countries whose greatest population are living in rural areas (CIA World fact book, 2010). Ghana can be cited as an example of a country with 56% rural population and 30% as share of agriculture GDP (G.S.S, 2011). Most people in the country survive on meagre annual per capita income of less than $1,000, based largely on low productivity of agriculture and their production systems oriented towards home consumption (Koroma, 2007).

In Ghana, agriculture sector remains the main source of livelihood for the majority of people accounting for 52% of employment (G.S.S, 2011). In view of this, Government's strategies to foster economic development places more emphasis on agriculture sector (MoFA, 2010). Imoudou et al. (1992), however reported that the inability of the agriculture sector in most developing countries to produce enough food to attain projected annual targets has been attributed to a number of problems including agronomic constraints faced by farmers.

The Government of Ghana not relenting in its effort to help farmers has partnered with Millennium Challenge Corporation to implement MiDA Agricultural Programme in 2007. The programme has overall goal of reducing poverty through economic growth led by the transformation of agricultural practices in twenty three (23) selected Districts of Ghana and promoting commercial orientation to the cropping, post-harvest storage, transportation, processing and marketing of high-value cash and staple food crops. Under the project are two - fold programme objectives: i) Increase production and productivity of high-value cash and food crops in the intervention zones in Ghana and ii) Enhance the

competitiveness of high value cash and food crops in the local and international markets **(**MiDA, 2011). One of the major crops financed through the Banks in the Hohoe Municipal Area was Rice. Rice was considered one of the important staple foods in Ghana because it serves as an important source of income for producers and contributes significantly to food security and poverty reduction (Portuphy, 2001). Besides, per capita consumption of rice in Ghana has increased steadily between 1980 and 2005 from 12.4 kg/year to 15.1 kg/year (MOFA, 2009). Hohoe Municipal Area is well noted for rice cultivation with an average yearly production of 19,560 MT (MoFA, 2009). Rice contains nutrients such as vitamins, protein, and carbohydrate which aids in human growth and development. Also bye products of rice are used in formulating animal feed while its cultivation creates employment for people in the country. Since 1970, efforts have been made by various governments to develop the rice industry. In the 1970s, the Government of Ghana provided subsidies to rice farmers. At the time, rice scheme was considered a major tool in improving food security and increasing rural incomes of farmers (Chapman et al., 2003) It must be emphasized that all the national development plans, policies, programmes, and strategies as captured in the Medium Term Agricultural Development Programme,1991-2000 (MTADP), Accelerated Agricultural Growth and Development Strategy,1996-1999 (AAGDS), Growth and Poverty Reduction Strategy,2003-2009 (GPRS I and II), Food and Agricultural Sector Development Policy,2002-date (FASDEP I and II), and Medium Term Agriculture Sector Investment Plan,2009-2015 (METASIP) have sought to promote rice production to address food security and poverty reduction. Some of the rice projects reviewed are: NERRICA rice dissemination project, Sustainable development of rain fed lowland rice production project, Rice Sector Support Project, Inland Valley Rice Development Project, Small Scale Irrigation Development Project and Rice Seed Production project. FASDEP II, which is development policy guideline (2008 – 2010), targets reducing rice, imports by 30% through increasing production levels to 370,000 tons per annum to ensure food security and import substitution. However, most of these efforts have been unsuccessful due to several constraints including: inadequate capital, insufficient research and extension support, inappropriate production system, inadequate basic infrastructure and inappropriate marketing strategy (Kyei-Baffour, 2010)

II. PROBLEM STATEMENT

Over the years, donors in the agricultural sector have supported Ghana in terms of agricultural technology to support farmers to increase production and this has been through several institutional credit schemes (Owusu-Antwi et al. 2010). These programmes had not significantly impacted on farmers' level of productivity and standard of living as desired because of the numerous problems identified as agronomic constraints (Awunyo-vitor, 2012; Aryeetey, 1996; Von Pischke, 1980).

Ghana in 2007 started implementing the MiDA agricultural credit programme. The programme design was assumed to have taken into account the flaws observed from previous agricultural projects in Ghana. However after five years of implementation, evidence available shows that, a lot of agronomic constraints were encountered under the rice cultivation and this has led to poor yield. This means that, either those constraints had not been encountered before or due to climate change and other factors there were new emerging factors accounting for low yield as well as poor loan repayment performance. Agronomic constraints to farmers have become a topic of considerable importance in recent times especially in developing countries including Ghana where farmers are finding it difficult to attain maximum yield potential. For Ghana to achieve self-sufficiency in rice production, major constraints have to be address so as to enhance output in the various production ecologies. Leaving this agronomic issue unaddressed in the first place will have consequential effect on agricultural productivity, food security, employment, famine, nutrition, health, poverty reduction, household welfare and national income (Zeller, 1997). Secondly, the MiDA agricultural credit programme is a newly implemented credit programme in Ghana, with limited or no empirical studies focusing on agronomic constraints. In light of this, this study intends to fill the knowledge gap by answering the question; what were the agronomic constraints faced by beneficiaries under the MiDA agricultural credit programme and how could the problem be avoided in the future?

Objectives of the Study

1. To identify socio –demographic characteristics of respondents under the scheme
2. To identify and rank major constraints faced by rice producers under the scheme

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III. METHODOLOGY

Methods of Analyses

Ranking Major Constraints Faced by Rice Producers under the Scheme

Kendall"s coefficient of concordance was used to measure the degree of agreement among m set of n ranks of constraints facing rice farmers. The co-efficient (W) is an index that measures the ratio of the observed variance of the sum of ranks to the maximum possible variance of the sum of the ranks. The idea behind this index is to find the sum of the ranks for each constraint being ranked and then to examine the variability of this sum. If the rankings are in perfect agreement, the variability among these sums will be a maximum. The identified constraints/problems are ranked from the most pressing constraint/problem to the least pressing constraint. In computing the total rank score for each problem, the problem with the least score is ranked as most pressing whilst the one with the highest score is ranked as the least pressing problem. The rank scores computed are then used to calculate the co-efficient of concordance (w), to obtain the degree of agreement in the rankings. The co-efficient of concordance (w) ranges from zero (0) to one (1). It will be 1 when the ranks assigned by each farmer are exactly the same as those assigned by other farmers and will be 0 when there is a maximum disagreement among them. In order to achieve this objective, constraints faced by rice producers were identified from literature (Omofonmwan and Kadiri, 2007; Osei-Asare, 2010) and farmers were asked to rank these factors in order of importance. Then Kendall"s co efficient of concordance (W) was used to measure the degree of agreement among m set of n ranks.

$$W = \frac{12\left[\Sigma T^2 - \frac{(\sum T)^2}{n}\right]}{nm^2\left(n^2-1\right)} \quad \text{.....(1)}$$

T=Denotes sum of ranks for each factor being ranked

m=Denotes number of farmers to be interviewed

n= Denotes number of rankings

Hypothesis Validation and Significance Test for W

The following hypothesis was validated using F statistics H0: There is no agreement among the rankings of the constraints H1: There is agreement among the rankings of the constraints The co efficient of concordance (W) was tested for significance in terms of F distribution. It is given by:

$$F = \frac{(m-1)W}{1-Wc} \quad \text{..... (2)}$$

Where Wc is the calculated co efficient of concordance (W)

The F statistic has V1= (n-1)-2/m degree of freedom for the numerator, and

V2= (m-1)[(n-1)-2/m] degrees of freedom for the denominator

Decision Rule

If Fcal > Fcrit then reject the null hypothesis

If Fcal < Fcrit then accept the null hypothesis

Sample Size and Sampling Technique

Multi-stage sampling technique was used in selecting 120 loan beneficiaries under the MiDA/ACP Scheme in the Hohoe Municipal area. The first stage involved purposive selection of the four (4) FBOs that cultivated rice under the MiDA agricultural credit program. A list of loan beneficiaries was collected from the Banks by the help of the credit officers and this served as the sample frame. In all, 199 individuals from 4 FBOs benefited under the programme. Since the

membership of the four (4) FBOs were not the same, a proportional sampling technique was employed to decide on the number of members to select per group as well as the number of males and females per group. During the second stage of selection, simple random sampling was used to arrive at the required number of beneficiaries per the four FBOs to make up to the total sample size (120). In doing this, for each of the four FBOs visited, a ''Yes'' or ''No'' response was written on pieces of paper and placed in an opaque poly bag and thoroughly mixed. The ''Yes'' in the poly bag was equal to the required sample size per FBO. Each member of the group was asked to hand pick a response from the poly bag. All those who selected ''Yes'' were the farmers interviewed.

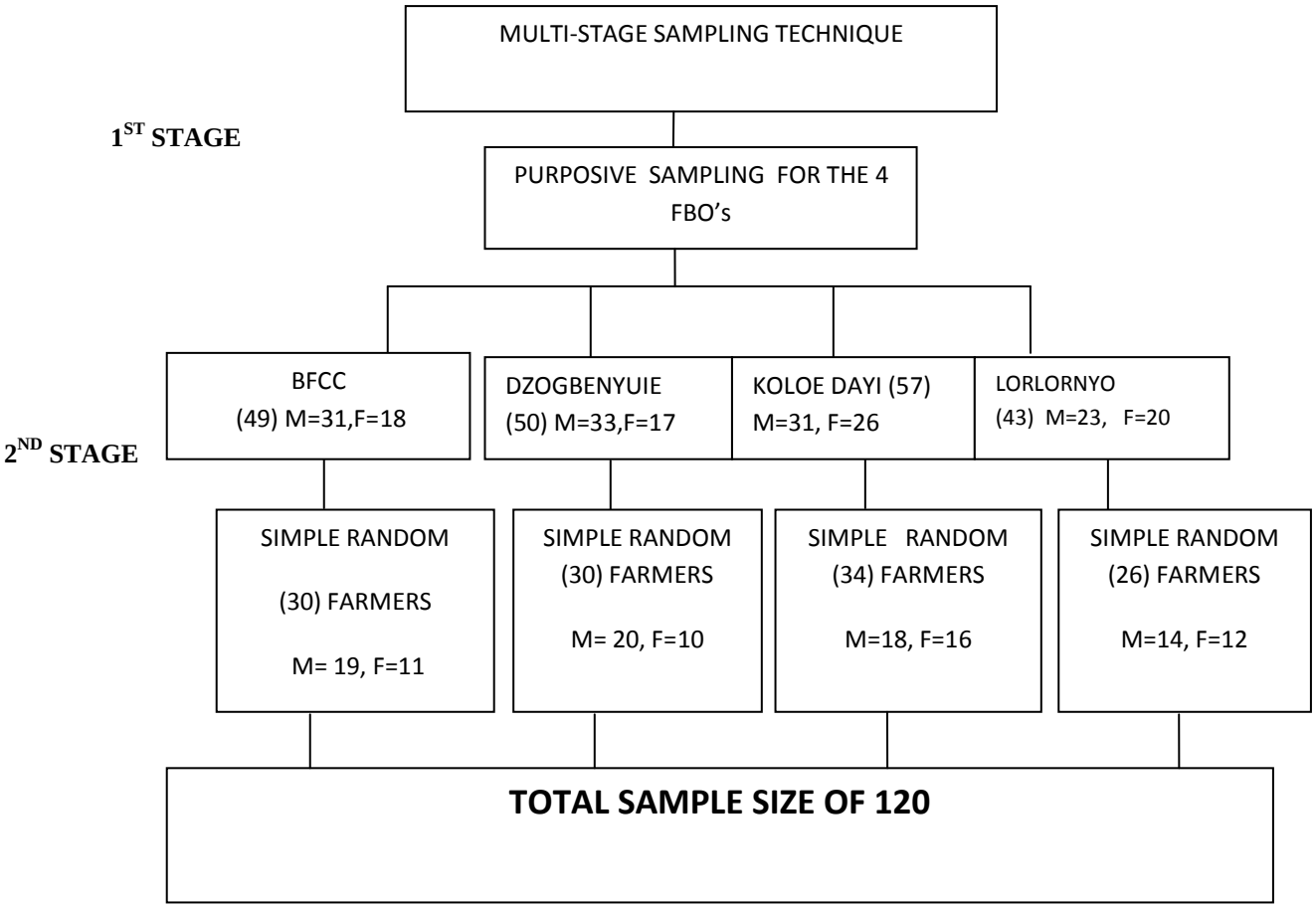

Figure 3.1 Schematic presentation of Sampling Technique

Method of Data Collection

Interviews using structured questionnaire were the main techniques used in the gathering the requisite data. Open and close ended questions were used. Some of the information collected from farmers includes borrower's characteristics such as age, sex, marital status, level of education, household size and farming experience e.t.c. The open- ended questions were to bring out understanding of the situation on the ground.

Study Area

The study area is Hohoe Municipality in the Volta Region where rice is grown as a cash crop. The Municipality falls under southern intervention zone, one of the three intervention zones within the MiDA agricultural credit programme. The Municipality is located within longitude $0^{o}15'$E and $0^{o}45'$E and Latitude $6^{o}45'$Nand $7^{o}15'$N at the heart of the Volta Region.The Municipality falls within the Forest-Savanna transitional ecological zone of Ghana, with the forest part at its southern and eastern parts and tapering into the middle of the Municipality. The Soils are generally sandy with overlying iron pans. The rainfall pattern in this area is bimodal, normally occurring between April through to July for the major season and September through November for the minor season with a mean rainfall of 1,300 mm per annum.

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IV. RESULTS AND DISCUSSIONS

Summary of Socio – Demographic Data:

The descriptive statistics of socio-demographic profile are presented in Table 1. Age range for farmers was between 26 and 68 years old. The household size of respondents varied from 1 to 19. Average family size was of 4 persons, with an overall dependency ratio of between 0.3 to 1.0. Farm size per household was between 0.81 to 24 ha while farming experience was between 2 to 35 years.

Table: I Summary of Socio – Demographic

Variables	N	Min.	Max.	Mean	Std. Dev.
Age (yrs)	120	26	68	41.89	7.31
Household size(No.)	120	1	19	4.05	2.86
Education (yrs)	120	0	16	8.35	4.14
Farm size (Ha)	120	0.81	24.28	3.50	2.40
Farming Experience (yrs)	120	2	35	11.50	5.43
Dependency ratio	120	.3	1.0	0.733	0.2128

Source: Field Survey, 2012.

Table: II Socio-Demographic Characteristics of respondents

Variables	Totals (%)
Sex	
Male	58
Female	42
Age(yrs	
≤ 29	
30-39	2
40- 49	38
≥50	12
Marital Status	
Married	75
Never married	15
Divorced	10
Educational	
None	8
Primary	50
Secondary	34
Tertiary	8
Location	
Akpafu Odomi	25
Gbi Godenu	28
Gbi Wegbe	22
SantrokofiBuem	25
Farming	
Experience(yrs)	
≤5	10
6-11	49
12-17	26
18-23	12
≥24	3
Farm size(Ha)	
< 2.0	10
2.1- 4.0	70
4.1- 6.0	7
> 6	13

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Socio-Demographic Characteristics of respondents:

Sex

The sex distribution of the respondents in Table 2 revealed that, 58% of the farmers were males while 42% were females under the MiDA agriculture credit programme. This shows that majority of the respondents were males. This agrees with finding of Chapman et al. (2003) that, rice cultivation in Ghana is dominated by males while females are involved in other operations such as broadcasting, weeding, winnowing and the selection of seeds.

Age of respondents

Table 2 shows that, 12% of the respondents were aged above ≥50 years while 2% of the respondents were aged below ≤ 29 years. Farmers aged between 40-49 years represent 48% of the population while 30-39 years represent 38%. This indicates that, majority of respondents were in active working population. The result also implies that, the youths ≤ 29 years involved in the cultivation of rice under the MiDA agricultural credit programme were not many. This supports the findings of Adekunle et al. (2009) that, the involvement of the youth in agricultural activities in Nigeria had steadily declined in recent years due to the fact that, most youths are schooling or might prefer engaging themselves into quicker money-making jobs and, perhaps, less tasking occupations than going into the rigorous tasks of farming. In addition, most youths have moved from rural areas to urban areas in search for high-paying white collar employments or opportunities to invest in less risky areas with higher rates of returns. The result also supported the growing evidence of ageing farming population in most parts of Nigeria as reported by (Akpan, 2010).

Marital status of respondents

The result from Table 2 shows that 75% of the respondents were married, 15% have not married whilst 10% were divorced. This indication suggests that, married respondents will have more responsibilities to bear than never married respondents.

Educational level of respondents

Results from Table 2 indicated that, majority of the respondents (50%) schooled up to primary level while 34% had up to secondary level. About 8% of the respondent had tertiary education whiles 8% had no formal education. This low educational level of the farmers had affected productivity by not readily responding to improved technologies and innovations that could have enhanced better returns from farm investment (Oke et al., 2007).

Location of respondents

From the results of Table 2, Santrokofi Buem and Akpafu Odomi recorded 25% each for respondents while majority of the respondents 28% were from Gbi Godenu. Productivity was different across the locations. This is agrees to Paxton et al. (2000) findings that, rural borrowers' main income source is agriculture which depends mainly on weather condition.

Farming Experience of respondents

The descriptive results from Table 2 revealed that, 49% of the farmers have farming experience between 6-11 years while 3% had >24 years experience. The result suggests that, less than half of the farmers have considerable rice farming experience.

Farm sizes of respondents

The findings from the studies as in Table 2 revealed that, 70% of the beneficiaries had farm sizes of 2.1- 4.0 hectares. This is an indication of small scale nature of rice farming.

Constraints and Challenges Faced by Rice Producers:

Constraints faced by rice producers

Good returns from farm normally require farmers' to overcome agronomic and marketing constraints. However during production and marketing stages, the farmers encountered some constraints. The farmers were presented with some constraints to confirm its applicability and to rank them. In ranking, the constraint with highest number assumes the least important one and vice versa. Result of farmers' rankings of constraints can found in Table 3. The rice farmers under the MiDA agricultural credit programme within the Hohoe Municipality ranked poor climatic condition, high incidence of pests, poor yield, high cost of farm inputs and problem of poor milling equipment to be the topmost five constraints. The

least constraints ranked by farmers include: Incidence of bush fire, poor seed quality, high incidence of diseases, poor transportation & storage facilities. The first major intractable constraint that confronted most rice farmers' was poor climatic condition. Rice cultivation in the area largely depended on rainfall and its distribution was erratic and unpredictable making it difficult to crop twice in a year. Some few farms (2%) also experienced flood as the rice was almost about to be harvested. This caused loss in yield and has affected their returns. The result is in line with what Osei-Asare (2010) found in his research.

The second most serious constraint was the devastating effect of pests on rice farms namely birds & rodents (e.g.birds, rats, grass cutters, Squirrels etc.). This has caused reduction in yield and subsequently affected loan repayment performance. This finding is in agreement with what Omofonmwan and Kadiri (2007); Adeyemo (1984) observed on devastating effects of pests on rice farms in Nigeria. The cumulative effect of all the constraints in rice production resulted in low yield per hectare, which in turn had implications on their financial returns. Input supplies such as insecticides, chemicals, fertilizers and herbicides were very expensive on the local market. This implies that, smallholder farmers who were unable to afford these inputs resort to minimal manure application or do nothing. This has consequentially affected yield as well as returns. This was evident in a research conducted by Osei- Asare (2010) which states that, production of rice in Ghana has consistently remained unattractive due to the associated high cost of inputs. The value of output depends on the grains quality. Most of the milling machines used was small local mills of the Engelberg huller type which removes the husk and bran from the rice grain in one operation. Most of these milling machines do not have de-stoners, graders, polishers and colour separators hence resulted in producing excessive broken grains thereby reducing the quality of the grains. This agrees with findings of Osei- Asare (2010) and Chapman et al. (2003) that, the quality of locally produced rice is far below that of imported rice mainly due to the lack of investments in quality state-of-the-art processing/milling equipment.

Table: III Constraints ranked by Rice Farmers under the MiDA Credit Programme

Constraints to loan repayment	Mean rank	Ranking
Poor climatic condition	2.40	1
High Incidence of Pests	3.77	2
Poor yield	3.90	3
High cost of farm inputs	4.88	4
Problem of poor milling equipment	5.26	5
Low Market Price	5.47	6
Problem of appropriate harvesting technology	6.07	7
Problem of product quality	6.66	8
Poor Transportation & Storage facilities	7.93	9
High Incidence of Diseases	10.30	10
Poor seed quality	10.33	11
Incidence of bush fire	11.04	12
Test Statistics		
N =120	df= 11	
Kendall's W= 0.617	Asymp. Sig.= 0.000***	

Source: Field Survey, 2012. **** Significant at 1% level*

Further analysis to test for the agreement among farmers' constraints ranked, Kendall's coefficient of concordance was used. The estimated Kendall's coefficient (w) was 0.61 implying that, there was 61% agreement among the farmers' constraints ranked. In testing the significance of the estimated Kendall's coefficient of concordance, the F- statistic was employed. The F- value obtained shows that, the constraints ranked were statistically significant at 1%. This implies that, the null hypothesis should be rejected in favour of the alternate hypothesis. From the results, it can therefore be concluded that there is agreement among the farmers' rankings of constraints.

V. CONCLUSION

- The result showed that, 58% of beneficiaries were males while 42% were females. 50% attended school up to primary level while 8% attended up to tertiary, 70% have farm sizes between 2.1-4.0 Ha.
- The five topmost constraints faced by farmers include: poor climatic conditions, high incidence of pests, poor yield, high cost of inputs and problem of poor milling equipment

RECOMMENDATION

- These constraints call for investment in irrigation facility, good agricultural practices (GAP), buying of inputs in bulk to enjoy discounts.
- Project initiators should collaborate with crop specialist/extension officers to help farmers address agronomic constraints such as pests & diseases and should promote business skills to farmers.
- Project initiators in the rice sector should incorporate the provision of modern milling machines.

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