



**DETERMINANTS OF RICE FARMERS' PARTICIPATION IN FERTILIZER
SUBSIDY PROGRAM: A CASE STUDY FROM THE BAGUINEDA IRRIGATED
PERIMETER, MALI**

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ABSTRACT

The study examine the determinants of rice farmers' participation in fertilizer subsidy program in the Baguineda Irrigated Perimeter of Mali. Data were collected from 384 rice farmers, including 234 non-beneficiaries and 150 beneficiaries of the subsidized fertilizer. The results reveal that 48% of males benefit from the fertiliser subsidy. In contrast, only 2% of females benefit from the fertiliser subsidy. Thus, men participate more than women in the fertiliser subsidy policy in the Baguineda irrigated area. The result revealed that 19.54% of rice farmers with a basic level of education benefit from the fertiliser subsidy, compared to 17.55% of rice farmers with no education in the Baguineda irrigated area. The results of the Mann Whitney U test indicate that the quantitative variables (cultivated area, yield per hectare, number of years of experience in agriculture, number of years of experience in rice cultivation, and income from rice sales) are significantly correlated with participation status in the fertiliser subsidy policy in the Baguineda irrigated area were statistically significant at 1%. The result revealed that area cultivated and yield had a positive and significant influence on the status of participation in the fertilizer subsidy policy in the Baguineda Irrigated Perimeter at $P < 0.001$. A Logit model was used for the data analysis. The results indicate that factors such as cultivated area and yield have a significant positive influence on program participation, while training in agricultural production technique has a significant negative influence. Based on these results, the study recommends agricultural land development and strategies for increasing agricultural production, providing targeted training to farmers on various cultivation techniques and promoting participation in agricultural input subsidy policy with the aim of improving agricultural productivity.

Keywords: Farming, Fertilizer, Rice, Subsidy and Participation

INTRODUCTION

In Mali, recurring food crises affecting the Malian population, with rising malnutrition rates, have a negative impact on sustainable human development. The Baguineda Irrigated Perimeter Office is a rice-producing area with total control over water and market gardening. Producers in this area face enormous problems such as declining soil fertility, high agricultural input costs, climate hazards, malnutrition and plant pests. The results of the study by Sidibé (2009) in the Baguineda Irrigated Perimeter area showed a cereal deficit of 1,235.5 tonnes per household per year. Faced with the scale and recurrence of certain major problems, namely the risks associated with climate hazards, high land pressure, population explosion due to the massive influx of migrants settling in the area, and urbanisation, rice farmers are using various strategies to improve food security in the Baguineda Irrigated Perimeter area (SIDIBE *et al.*, 2017). Indeed, rice production faces enormous constraints, including the unavailability or high cost of agricultural inputs, particularly certified seeds (Arouna and Diagne, 2011; Assigbé, 2011). Before the fertilizer subsidy program, the Baguineda irrigated perimeter area faced a



situation of food insecurity. On the other hand, after the implementation of the fertilizer subsidy program, the area continues to face food insecurity.

Fertilizers constitute a significant portion in agricultural production areas given the budget allocated to the fertilizer subsidy, the quantities used and the needs expressed in agricultural production areas. The supply and financing of agricultural inputs are part of an overall policy characterised by economic liberalism. The Agricultural Orientation Law (LOA), passed in 2006, outlines the financing and management of agricultural inputs, including fertilisers and equipment. In 2006, the Agricultural Orientation Law (LOA) adopted by the National Assembly deals in Title IV, 'Factors of Production,' and specifically in Chapters 7 and 8, with provisions relating to agricultural inputs and equipment as well as the financing of agriculture. For the 2021-2022 season, the government has allocated 28,101,823,871 CFA francs to subsidise agricultural inputs, and the total quantity of subsidised fertiliser is 98,527 tonnes (DNA, 2022). According to Mali's National Directorate of Agriculture in 2023, a subsidy is defined as support provided to producers through the state covering part of the cost of an agricultural input. The portion of the cost of agricultural inputs subsidised by the state is the difference between the actual price and the subsidised price for fertilisers and 50% for certified seeds (particularly hybrid maize seeds) (DNA, 2023).

Since the food and nutrition crisis of 2008, the Government of the Republic of Mali has regularly allocated a significant portion of the agriculture budget to the purchase of fertilisers based on the needs expressed in technical reports (Thériault, et al. 2018, Smale, 2019). The budgetary resources allocated to agricultural fertilizer subsidies increased significantly from around 11 billion CFA francs to nearly 40 billion CFA francs between 2008 and 2017 (Ministry of Agriculture, 2017). Fertilizer subsidies represent an increasingly large share of agricultural sector expenditure. Fertiliser subsidies account for nearly 90% of the cost of subsidies for fertilisers and seeds (Thériault, *et al.*, 2015). Between 2008 and 2017, the Malian fertilizer subsidy budget increased significantly, from approximately 11 billion CFA francs to nearly 40 billion CFA francs (Ministry of Agriculture, 2017). Fertilizer subsidies thus represent an increasingly large share of agricultural sector expenditure, accounting for nearly 90% of the cost of subsidies for fertilisers and seeds (Thériault *et al.*, 2015). For the 2021-2022 season, the government allocated over 28 billion CFA francs to subsidise agricultural inputs, including 98,527 tonnes of fertiliser (DNA, 2022).

Despite these investments, the management of agricultural fertiliser subsidies in Mali has faced several enormous challenges. These include inefficient distribution, misuse by farmers, insufficient supplied during peak seasons, lack of price controls, delayed delivery and the resale of subsidised fertilisers by other producers. However, the price of subsidised fertilizers in Mali has declined over time. On the national market and in the Baguineda Irrigated Perimeter area, the price of subsidised fertilisers was 14,000 CFA francs in 2013-2024, compared to 12,500 CFA francs in 2008-2012.

Regarding its various agricultural policies and food security in Mali, the management of agricultural fertiliser subsidies faces enormous challenges, namely: inefficient management of subsidised fertilisers in agricultural production areas; misuse of fertilisers by producers; insufficient quantities of subsidised fertilisers during certain agricultural seasons; lack of control over the prices of subsidised agricultural fertilisers; inaccessibility of agricultural fertilisers to producers in a timely manner and the sale of subsidised fertilisers by other producers in production areas.

According to the World Trade Organisation (WTO) and the Organisation for Economic Co-operation and Development (OECD), a subsidy is a financial contribution or any form of income or price support provided by a government or public body within a territory. It may include a direct transfer of funds, foregone or uncollected revenue (e.g., tax credits), or the



provision of goods or services (Bellmann, 2019). Agricultural input subsidies, a form of social protection, are widely regarded as an important means of boosting agricultural productivity in low- and middle-income countries (Gordon, 2000, Hemming *et al.*, 2018). These subsidies are thought to be particularly crucial in regions where smallholder farmers lack the financial resources to afford essential inputs and technologies. By making inputs and technologies more accessible, subsidies can enhance food and nutritional security (Wiggins and Brooks, 2010).

Additionally, agricultural input subsidies are seen as a means of increasing agricultural productivity, lower food prices, and support a more pro-poor economy (Walls *et al.*, 2018). While the debate on the effectiveness of subsidy programs remains contentious, empirical studies have shown that fertiliser subsidies can lead to increased fertiliser use and improved agricultural productivity (Chibwana *et al.*, 2010; Duflo *et al.* 2011; Ricker-Gilbert *et al.*, 2011; Mason and Jayne 2012; Ricker-Gilbert and Jayne 2012; Carter *et al.*, 2014; Mason *et al.*, 2017; Seck, 2017; Coulibaly, 2019).

In the Baguineda irrigated area, the fertiliser programme is managed by the technical services of Agriculture, which identifies beneficiaries. Non-beneficiaries are those rice farmers who are not registered with these technical services or are located in other rice-growing areas. In light of the Malian fertiliser subsidy policy's implementation since 2008, including the context and challenges described above, this study aims to examine the factors that influence farmers' participation in the fertiliser subsidy programme and to provide actionable recommendations to policymakers to enhance the program's effectiveness and improve agricultural productivity, income, and food security.

MATERIALS AND METHODS

The Study Area

Located in Mali, the Koulikoro region, 30 km from Bamako on the right bank of the Niger River, the municipality of Baguineda covers an area of 987.04 km². It is bordered to the north by the municipalities of Tienfala and Koulikoro, to the south by the municipalities of Mountougoula and N'Gouraba, to the east by the rural municipality of Binko, and to the west by the municipality of Kalaban-coro and municipality VI of the Bamako district. The OPIB's area of intervention covers 22 villages, all located in the rural commune of Baguineda-Camp. The total area covered by the OPIB is 19708 ha, divided between two zones: an irrigable zone of 4500 ha covered by TF 1075, of which approximately 3000 ha are fully water-controlled. This area is dominated by a 44 km long main canal that runs from Missabougou (Sotuba Dam) to Tanima. A 15208 ha non-irrigated area covered by TF 1753, occupied by dwellings, dry crops, plantations and pastures.

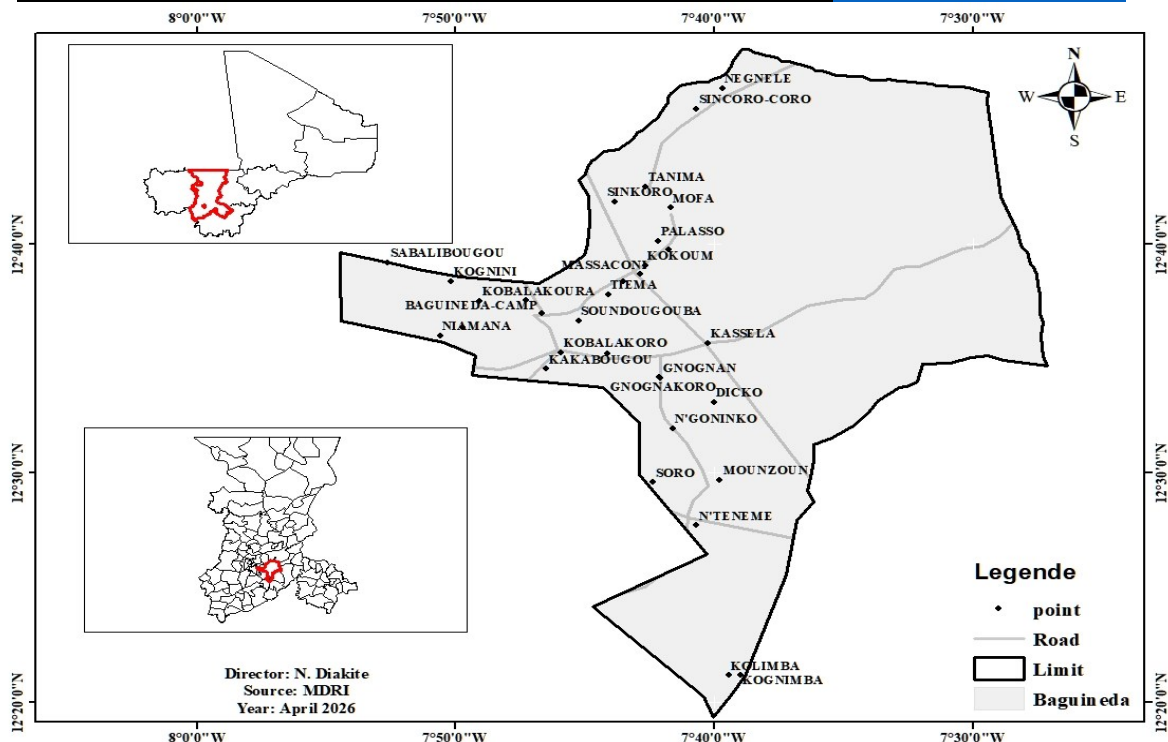


Figure 1: Map of the rural municipality of Baguineda in Mali

Criteria for Participation in the Fertilizer Subsidy Program in Mali

The conceptual framework regarding the participation criteria for the fertilizer subsidy program shows that in Mali, the selection of crops eligible for the subsidy is primarily based on the technical indicators of each crop, particularly profitability indicators, including each crop's contribution to the national economy through value added generation. Under the hierarchy of the Ministry of Agriculture, the technical agricultural services and directorates manage the fertilizer subsidy program based on the agricultural policy and the agricultural framework law in Mali. In addition to these technical and economic indicators, strategic reasons at the national level may justify the selection of one crop over another (food security, national budget level, etc.). In the case of our research, we chose the Baguineda irrigated area, which is a rice-growing area with complete water control and the presence of agricultural technical services. Rice cultivation is an intensive crop and contributes approximately 5% to the GDP. The government subsidy for rice producers in the Baguineda irrigated area covers mineral and organic fertilizers, whether imported or produced by domestic industrial units.

The eligibility criteria for producers to receive subsidized fertilizers are as follows:

- To be a farmer recognized by the support and advisory services (Direction, Office, Technical Agricultural Services) as a producer of one or more crops eligible for agricultural subsidies in one of the villages within their areas of operation and to belong to a producer group;
- To have arable land (regardless of the type of land tenure) clearly identified by the support and advisory agent in charge of the village concerned;
- To be registered with the planting programs among the producers of the crops concerned for the current season.

This state subsidy (SE) corresponds to the difference between the benchmark price for suppliers (PRF) and the selling price (PC) for each type of input benefiting from the subsidy. This difference will be covered by the state. Mathematically, it is given by the following formula:

$$SE = PRF - PC \quad \dots(1)$$

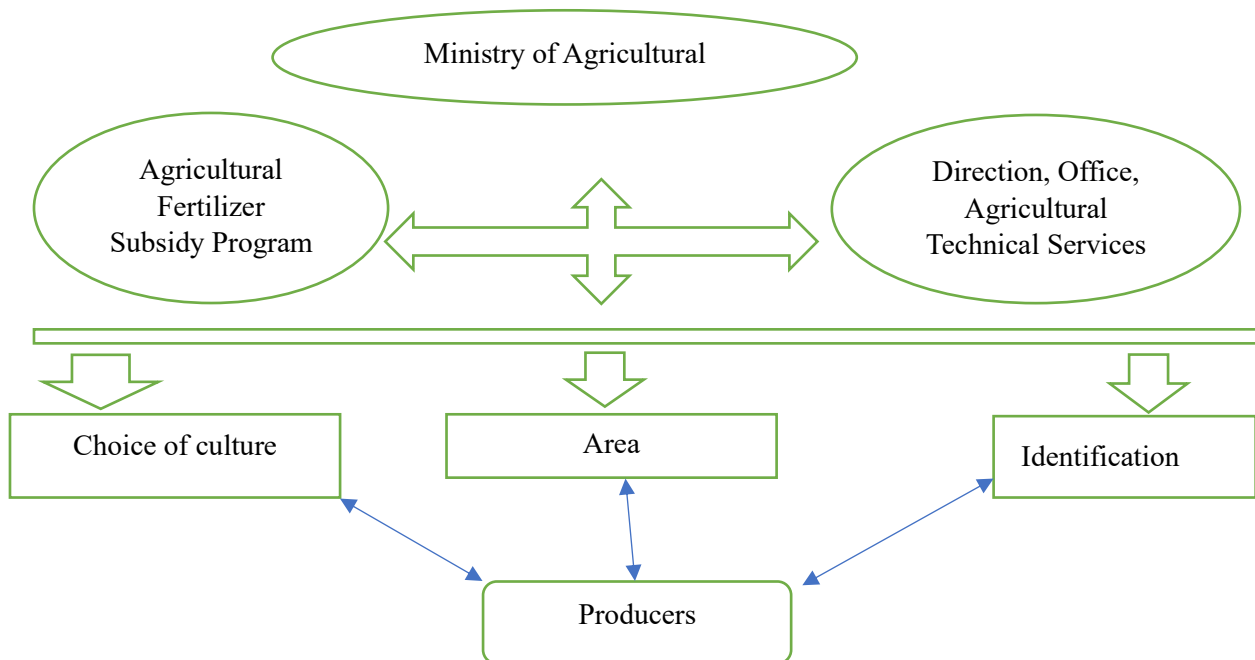


Figure 2: *Criteria for Participation in the Fertilizer Subsidy Program* **Source:** Authors, 2025

Sampling Technique

A probability sampling technique was adopted for the study, where each element of the population has an equal chance of being selected (the selection is made randomly, for example using statistical software, with a random number table or by drawing from a hat). The Cochran's formula was applied to determine the sample size of rice farmers in the Baguineda Irrigated Perimeter Office area. The sample size is 384 rice farmers divided between participants and non-participants in the fertiliser subsidy programme. The choice of a 5% margin of error was based on representativeness. Quantitative studies typically specify a margin of error, a confidence level, and the variability within the target population. We opted for a margin of error or degree of precision of 5 percent (5%) and a confidence level of ninety-five percent (95%) (Gilles Tounsi, 2025). This sampling technique was used in similar studies by Sangaré *et al.* (2025) and Maiga *et al.* (2024).

Cochran's formula:

$$N_0 = (Z^2pq) / e^2 \quad \dots(2)$$

$N_0 = 384$ rice farmers

- N_0 = sample size
- p = probability of the event occurring in the population, expressed as a fraction of 1; (0.5)
- $q = 1-p$, probability of the event not occurring in the population, expressed as a fraction of 1; (0.5)
- Z is a Z-value: 1.96, a standard value based on a confidence level of 95%, which is a standard confidence interval
- e is the level of accuracy (margin of error), 5%

The study involved 384 rice farmers in the Baguineda Irrigated Perimeter Office area. There were 150 participants or beneficiaries of the fertiliser subsidy policy and 234 controls or non-participants in the fertiliser subsidy policy, with a 100% accuracy test on Stata.

Method of Dats analysis

In this research, the dependent variable of the Logit model is a dichotomous variable called beneficiary or participant in the fertiliser subsidy policy. The independent or explanatory

variables are socio-economic and institutional characteristics that may influence participation in the fertiliser subsidy policy. These variables were selected based on correlation tests between the dependent variable and the explanatory variables.

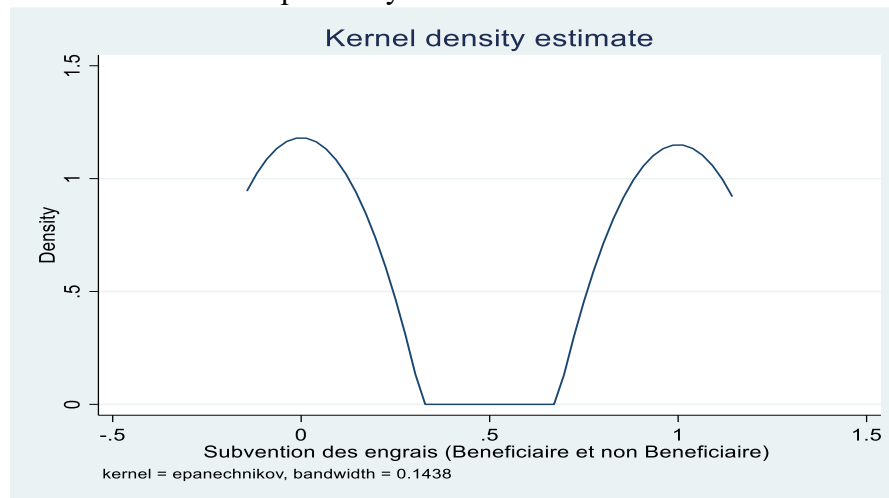


Figure 3: Shows the normality test

Source: Authors, 2024

In order to verify whether or not there is a dependency between the various explanatory variables and the status of rice farmers' participation in the fertiliser subsidy policy, the Chi-square test was used for categorical explanatory variables, and for continuous and discrete explanatory variables, the non-parametric equivalent of the Student's t-test, i.e. the Mann-Whitney U test, was used. This choice was made because we tested the normality of our distributions using the kernel density estimate of the STATA software. Figure 3 shows the normality test, indicating that the distributions do not follow a normal distribution.

Model specification

The participation of rice farmers in the fertiliser subsidy program has been the subject of several econometric models. However, the Logit model is used to analyse the determining factors for rice farmers benefiting from the fertiliser subsidy. This method is necessary due to the nature of the categorical dependent variable. It estimates the probability of rice farmers participating in the fertiliser subsidy policy based on independent variables.

The dependent variable takes the value 1 if the individual benefits from the fertiliser subsidy and 0 otherwise. As the dependent variable is participation in the fertiliser subsidy policy, the values are coded as follows.

$$Y = \begin{cases} 1: \text{Participating in the fertiliser subsidy policy} \\ 0: \text{Not Participating in the fertiliser subsidy policy} \end{cases}$$

The binary nature of our variable justifies the choice of this model for the study. Thus, logistic regression estimates the probability of a rice farmer participating in the fertiliser subsidy policy, but also measures the effect of variables associated with whether or not the farmer participates in the fertiliser subsidy.

The approach consists of explaining the dichotomous variable Y, which refers to participation in the fertiliser subsidy and takes the value 1 if the rice farmer is assigned to the subsidy and 0 if not, based on a set of K explanatory variables ($X_1, X_2, \dots, X_k$).

The sample is thus subdivided into two groups: rice farmers participating in the fertiliser subsidy $Y = 1$ and those not participating in the fertiliser subsidy $Y = 0$.

The study assumed that the probability of a rice farmer belonging to the first group $Y = 1$ benefiting from the fertiliser subsidy.

The principle of the Logit model can be summarised as follows:

- Let Y be a dichotomous dependent variable (taking the value 1 for the modality studied and 0 if not) and K independent variables ($X_1, X_2, \dots, X_k$).
- We also have a sample of n individuals indexed i, so for each individual, the K variables take the values ($x_{1i}; x_{2i}; \dots \dots \dots ; x_{ki}$);
- The probability P that individual i will take the value 1 is a function of $x_{1i}; x_{2i}; \dots ; x_{ki}$;
- Y can only take two values, F cannot be a linear function, so we use logistic regression to ensure that Y only takes these two values; thus:

$$P(Y=1) = f(X_1, X_2, \dots, X_k) \quad \dots(3)$$

The Logit model corresponds to the logistic distribution function:

$$F(x) = \frac{\exp(x)}{1 + \exp(x)} = p \quad \dots(4)$$

Applying the Logit transformation allows us to work with values between $[-\infty; +\infty]$. The term Logit refers to the following expression:

$$\text{Logit}(p) = \ln \left[\frac{p}{1-p} \right] = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots \dots \dots + \beta_k X_{ki} \quad \dots(5)$$

Where X represents the explanatory variables and β the parameters to be estimated.

RESULTS AND DISCUSSION

Relationship Between Categorical Variables and Participation Status in The Fertiliser Subsidy Policy

Table 1 below is a cross-tabulation of the socio-demographic and economic characteristics of rice farmers and their participation status in the fertiliser subsidy policy (participant and non-participant) in the Baguineda irrigated area in Mali. Table 1 also presents the results of the Chi-square test to determine the relationships of dependence between each explanatory variable and participation status in the fertiliser subsidy policy (participant and non-participant). The analysis in Table 1 shows that gender is significantly correlated with participation in the fertiliser subsidy policy. The results reveal that 48% of males benefit from the fertiliser subsidy. In contrast, only 2% of females benefit from the fertiliser subsidy. Thus, men participate more than women in the fertiliser subsidy policy in the Baguineda irrigated area, which is statistically significant at 10%. This result is similar to that of the study by Baki *et al.* (2018), which states that men are more inclined to participate in the fertiliser subsidy programme than women in Niger.

The level of education or instruction of rice farmers is significantly correlated with participation in the fertiliser subsidy policy in the Baguineda irrigated area, which is significant at 5%. The results in Table 1 reveal that 19.54% of rice farmers with a basic level of education benefit from the fertiliser subsidy, compared to 17.55% of rice farmers with no education in the Baguineda irrigated area. The results in Table 1 show that rice farmers in contact with research institutions (IER, AfricaRice) and development organisations (GIZ, IFDC, USAID, European Union) are significantly correlated with participation in the fertiliser subsidy programme, statistically significant at 5%. In the Baguineda irrigated area, 29% of rice farmers who are in contact with research institutions (IER, AfricaRice) and development organisations (GIZ, IFDC, USAID, European Union) participate in the fertiliser subsidy policy. Rice farmers who have received training in agricultural production techniques in the Baguineda irrigated area are significantly correlated with participation in the fertiliser subsidy policy, statistically significant at 1%. The results in Table 1 reveal that 15.56% of rice farmers who received cash transfers (cash) or in-kind transfers (agricultural equipment, agricultural inputs) from within the country for agricultural production are significantly correlated with the fertilizer subsidy policy in the Baguineda irrigated area, statistically significant at 1%.

Table 1: Relationships between categorical variables and participation status in the fertiliser subsidy policy

Variables		Fertiliser subsidy		Overall	Test Chi-2
		Participant	Non-participant		
Sex	Male	48.00%	47.00%	95.0%	2.96*
	Female	2.00%	3%	5.00%	
Marital status	Married	47%	48%	95%	1.76
	Widowed	0.66%	1.66%	2%	
	Divorced	1%	1.66%	3%	
Level of education	Literate	3.97%	5.30%	9.27%	10.29**
	Fundamental	19.54%	12.25%	31.79%	
	Secondary	6.95%	5.96%	12.91%	
	University	1,32%	1,99%	3,31%	
	None	17,55%	25,17%	42,72%	
Membership of an association or village group	Yes	12,91%	14,57%	27,48%	0,25
	No	36,42%	36,09%	72,51%	
Contact with an institution/organisation	Yes	29.80%	23.84%	53.64%	5.40**
	No	19.54%	26.82%	46.36%	
Technical training in agricultural production	Yes	30.46%	17.22%	47.68%	19.26***
	No	32.12%	20.20%	52.32%	
Access to agricultural credit	Yes	8.61%	8.94%	17.55%	0.0020
	No	40.73%	41.72%	82.45%	
Foreign money transfer	Yes	0%	25.17%	25.17%	98.90
	No	49.34%	25.50%	74.83%	
Cash transfer within the country	Yes	15.56%	28.81%	44.37%	19.60***
	No	33.77%	21.85%	55.63%	

***Significant at 1%; **significant at 5% and *significant at 10%

Source: Authors, 2024

Relationships Between Quantitative Variables and Participation Status in The Fertiliser Subsidy Policy

The results of the Mann Whitney U test in Table 2 below indicate that the quantitative variables: cultivated area, yield per hectare, number of years of experience in agriculture, number of years of experience in rice cultivation, and income from rice sales are significantly correlated with participation status in the fertiliser subsidy policy in the Baguineda irrigated area, statistically significant at 1%. The quantitative variables statistically significant at 1% above may influence the decision to participate in the subsidy policy. The sociodemographic variable of age is not statistically correlated with participation status in the fertiliser subsidy programme in the Baguineda irrigated area.

Table 2: Relationships between quantitative variables and participation in the fertiliser subsidy policy

	Fertiliser subsidy		U de Mann-Whitney
	Participant	Non Participant	
Age (average)	46	47	0.69
Cultivated Area (average)	1.07	1	6.20***
Yield/ha (average)	5,472.06	3,663.96	6.77***
Number of years of experience in agriculture (average)	27	23	2.89***
Number of years of experience growing rice (average)	26	23	2.97***
Income from rice sales (average)	1,713,088	753,314	6.77***

***Significant at 1%; **significant at 5% and *significant at 10%

Source: Authors, 2025

Determinants of Participation in Agricultural Fertilizer Subsidy Policy

The results in Table 3 reveal that cultivated area and yield have a positive and significant influence on the status of participation in the fertilizer subsidy policy in the Baguineda Irrigated Perimeter at $P < 0.001$. However, some arguments in the literature argue that the contribution of fertilizer subsidy to fertilizer use, agricultural productivity and cultivated area remains very limited (Coulibaly, 2019). On the other hand, training on agricultural production techniques significantly and negatively influences the status of participation in fertilizer subsidy policy. This explains why the training encourages not to use a lot of chemical fertilizers in the intensive rice growing system in the area of the Baguineda Irrigated Perimeter office in Mali.

It appears from Table 3 that the variables sex, level of education, contact with a research institution or development organization, the number of years of experience in agriculture, the number of years of experience in rice cultivation and the monetary transfer from within the country or in kind intended for rice farmers do not have significant influences on the status of participation in the fertilizer subsidy policy of rice farmers in the Baguineda Irrigated Perimeter, despite that a dependence relationship is found between them and the dependent variable. On the other hand, in a similar study in Burkina Faso in 2019, the results show that membership in a farmers' organization and the adoption of improved seeds improve the probability of participating in the subsidy program in rural areas (Coulibaly, 2019).

In Niger, Baki and Yacouba (2018) show that variables such as household size, sown area, quantity of fertilizer used, marital status, gender, and seed type are significant in explaining the decision to participate in the subsidy program. Unlike in our study in the Baguineda Irrigation Perimeter Office area, gender is not significant in participation in the agricultural fertilizer subsidy policy.

Table 3: Determinants of participation in agricultural fertilizer subsidy policy

Variables	Coefficient	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex						
Male	2.15	2.37	0.91	0.36	-2.49	6.79
Level of education						
Fundamental	0.52	0.52	1.00	0.31	-0.50	1.54
Secondary	0.91	0.63	1.44	0.15	-0.33	2.16
University	0.55	0.98	0.57	0.57	-1.36	2.48
None	-0.21	0.50	-0.42	0.67	-1.21	0.78
Contact with an institution/organisation						
Yes	0.64	0.53	1.21	0.52	-0.40	1.70
Foreign money transfer						
Yes	-0.27	0.32	-0.86	0.387	-0.90	0.35
Technical training in agricultural production						
Yes	-1.07	0.41	-2.60	0.000***	-1.88	-0.26
Cultivated Area	1.58	0.34	4.59	0.000***	0.90	2.25
Yield/ha	0.0005	0.0001	5.53	0.000***	0.0003	0.0007
Number of years of experience in agriculture (average)	0.005	0.060	0.10	0.923	-0.11	0.12
Number of years of experience growing rice (average)	-0.03	0.06	-0.54	0.59	-0.154	0.08
_cons	-5.84	2.84	-2.05	0.040	-11.43	-0.265
Régression logistique					Number of obs = 384 LR chi2(22) = 107.48 Prob > chi2 = 0.0000 Pseudo R2 = 0.2664	
Log likelihood = -156.39885						

***Significant at 1%; **significant at 5% and *significant at 10% **Source: Authors, 2025**

Similarly, the results of the study by Barasa *et al.* (2019) show that age, access to advisory services, land size, distance from the market, household size, and off-farm income

have a significant impact on farmers' access to subsidized fertilizers. Furthermore, in a similar study in Northern Ghana, AlHassan *et al.* (2020) show that education, nativity, and access to media are factors influencing the likelihood of participation in fertilizer subsidies. Also, in a study in Northern Ghana, Azumah and Zakaria (2019) who worked on fertilizer subsidy and rice productivity in Northern Ghana showed that farmers' participation in fertilizer subsidy programs was influenced by age, gender, education, farm size, membership in a farmer organization, access to media, knowledge of integrated soil and water conservation practices, farm holding and rice production. It also emerges in a similar study that Paudel *et al.* (2017) found distance to be the only factor influencing the decision to participate in fertilizer subsidy programs.

Thus, the results of our study corroborate with Baki and Yacouba (2018) and Coulibaly (2019) that the cultivated area and yield have a positive and significant influence on the status of participation in the agricultural fertilizer subsidy policy. However, in other similar studies in northern Ghana, Niger and Burkina Faso, farmers' participation in fertilizer subsidies was influenced by the amount of fertilizer used, marital status, gender, type of seeds, age, education, farm size, membership in a farmers' organization, access to media, knowledge of integrated soil and water conservation practices, farm operation and rice production.

CONCLUSION AND RECOMMENDATIONS

Given Mali's agro-sylvo-pastoral potential and multidimensional crises, the government has developed agricultural policies and agricultural input subsidy policies aimed at increasing agricultural productivity, strengthening food security, and reducing poverty through agricultural intensification. It has therefore implemented agricultural input subsidy policies, such as the fertilizer subsidy policy, implemented since the 2008 agricultural season.

The results revealed that cultivated area and yield have a positive and significant influence on participation in the fertilizer subsidy policy in the Baguineda Irrigated Perimeter. Training in agricultural productions techniques has a significant and negative influence on participation in the fertilizer subsidy policy. This is explained by the fact that training encourages the limited use of chemical fertilizers in the intensive rice farming system in the Baguineda Irrigation Perimeter area in Mali. The study recommends agricultural land development and strategies for increasing agricultural production, providing targeted training to farmers on various cultivation techniques and promoting participation in agricultural input subsidy policy with the aim of improving agricultural productivity.

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