



# Analysis of The Effectiveness of Fertilizer Subsidies Policy for Corn Farmers in Nagari Lingsuang Aua, West Pasaman

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**Abstract.** Fertilizer subsidy is one of the government's fiscal policies for farmers, which aims to increase agricultural production. This study aims to determine the procedures for implementing the subsidized fertilizer program and analyze the effectiveness of distributing subsidized fertilizers to corn farmers. The research was conducted in Nagari Lingsuang Aua, West Pasaman Regency, and was carried out from July to August 2022. This method was carried out using a survey method and to determine the sample using a purposive sampling method. Data were analyzed using descriptive and qualitative analysis. The study results indicate that the procedure for implementing subsidized fertilizers at the research site has been carried out in accordance with the implementation instructions that have been set. However, some things still need to be implemented, such as retailers not reconfirming the preparation of the RDKK to farmer groups and the monitoring stage was not carried out periodically (monthly). The fertilizer subsidy policy was measured in six precise indicators: price, type, time, quantity, place, and quality. Based on the six indicators, the price accuracy indicator was categorized as quite effective, the time accuracy indicator was categorized as ineffective, and the quantity accuracy indicator was classified as weak. The other three indicators, namely type, place, and quality, are categorized as very effective.

**Keywords:** Place, Price, Procedure, Quality, Time, Type.

## 1 Introduction

Agriculture is one sector that has an important role in the economy because it directly impacts the basic needs of people in Indonesia, one of which is corn. Corn is the most important food crop after rice and wheat; besides corn, it is also used as feed and industrial raw material. The need for food and feed in Indonesia continues to increase along with population growth. Therefore, a solution is needed to overcome these problems, one of which is by increasing corn productivity.

Food is a basic need for humans, and obtaining food is a human right of every person, as written in Article 27 of the 1945 Constitution. In addition to food, feed also has an important role for livestock, where the results from livestock also contribute to meeting basic human needs and the demand—processing industry. If food and feed availability are smaller than the need, it will create economic instability.

For food security, the steps taken by the government in implementing food policies are subsidizing production inputs, pricing policies, and reforming food institutions [1]. One of the production input subsidy policies is the subsidized fertilizer policy. The government's step in achieving the target of increasing agricultural production is to facilitate various agricultural facilities and infrastructure, including fertilizer subsidies. The fertilizer subsidy policy has been carried out since 2003. It aims to assist farmers in procuring fertilizers for their farms to obtain optimal results [2].

The application of fertilizer subsidies itself gets mixed opinions. For those who agree, using affordable fertilizers will increase farmers' yields and improve soil fertility [3], [4]. Increasing crop yields will encourage community food security [5]. Government policies to increase productivity will encourage spillover in the field of a positive environment [6]. Reducing community poverty [7]. However, overapplication can encourage environmental imbalances, as occurs in South Asia [8]. Alternatively, even reduces species diversity, as in Mali [9]. As well as making use of other factors of production, such as others allocated incorrectly, as happened in Turkey [10], [11].

The success of the fertilizer subsidy policy is indicated by the compatibility between the policy and the achievement of its policy objectives. If public services and participation are lacking in this policy, it is necessary to improve methods or better procedures. Effectiveness is generally used as a measure of success in carrying out activities. Thus, effectiveness measures the success or failure of a program or specified goal. Based on Presidential Regulation No. 15 of 2011 concerning subsidized fertilizers, supervision must pay attention to the correct six principles: the right type, the right amount, the right time, the right place, the right price, and the right quality. This study will examine the implementation procedure and the effectiveness of distributing subsidized fertilizers to corn farmers in Nagari Lingkuang Aua. Based on the description above, the problem formulation is obtained as follows: (1) What is the procedure for implementing the fertilizer subsidy program in Nagari Lingkuang Aua? (2) How is the effectiveness of the fertilizer subsidy policy based on the six indicators of fertilizer subsidy success?

## 2 Methods

The research was conducted in Nagari Lingkuang Aua, Pasaman District, West Pasaman Regency. This location was chosen deliberately because West Pasaman is the district with the highest allocation of subsidized fertilizers in West Sumatra and was one of the centers for corn commodities. The method used in this research is a survey method with a qualitative descriptive approach. The survey method has an investigative tool to obtain facts from existing symptoms to find factual information about the social, economic, and political institutions of a group or an area. The types of data used in this study are primary and secondary data, where preliminary data will be obtained from respondents related to the problem and research objectives. The data from this primary data were respondents' answers regarding the effectiveness of the fertilizer subsidy program. Secondary data was obtained from various reports or documents that contain the required information related to the research carried out.

For the first purpose, namely knowing the procedure for implementing the fertilizer subsidy program, the data were obtained through direct interviews with research informants. In contrast, the key informants in this study were the Secretary of the BPP

Pasaman District, subsidized fertilizer retailers, farmer group extensionists, and farmer group leaders. Meanwhile, the second objective, namely, to analyze the fertilizer subsidy policy for corn farmers in Nagari Lingkuang Aua, West Pasaman Regency, seen from the accuracy of price, accuracy of quantity, the accuracy of type, the accuracy of time, accuracy of place and accuracy of quality, qualitative descriptive analysis was used. In the second objective, to analyze the effectiveness of the subsidized fertilizer policy in terms of price accuracy, quantity accuracy, type accuracy, and timeliness, qualitative analysis was used. The percentage of effectiveness was measured using a formula that emphasizes the compatibility between the plan and the results of the Implementation of the fertilizer subsidy program. Subagyo (2000) explains that the level of effectiveness could be calculated using the following effectiveness formula:

$$\text{Effectiveness} = (\text{Realization} : \text{Target}) \times 100\% \quad (1)$$

After the percentages were obtained, the results were interpreted using percentage categories based on the assessment of effectiveness criteria. According to Sondang (2001:25), for determining the criteria for evaluating effectiveness in intervals were explained as follows:

- P < 40% : Very Ineffective
- 40% < P < 60% : Ineffective
- 60% < P < 80% : Quite Ineffective
- 80% < P < 100% : Effective

### 3 Result and Discussion

#### 3.1 Overview of Research Sites

Pasaman District is one of the sub-districts in West Pasaman Regency. The geographical location of Pasaman sub-district is 00°05' North Latitude – 00°03' South Latitude and 99°38' – 100° 58' East Longitude with an area of 508.93 km<sup>2</sup>. This area is equivalent to 13.09% of the total area of the Regency. West Pasaman is 3,887.77km<sup>2</sup>.

Nagari Lingkuang Aua Is the most extensive Nagari in Pasaman District. Nagari Lingkuang Aua has eleven jorongs, one of which is Simpang IV, the capital of Pasaman District. The distance from Wali Nagari to the District Capital is 1 km, to the Regency Capital is 1 km, and from Wali Nagari to the Capital of West Sumatra Province is 170 km. Access from Nagari Lingkuang Aua to the Regency Capital and Provincial Capital is smooth.

#### 3.2 Respondent Identity

The majority of corn farmers in Nagari Lingkuang Aua were in the productive age. There were as many as 12 farmers aged 51 to 60 years, 13 farmers aged 41 to 50 years, four farmers aged 31 to 40 years, and only four at an unproductive age, namely those aged more than 60 years. The farmer's age will affect the ability to think and work a farmer. Generally, maize farmers in Nagari Lingkuang Aua have males, but some have females. Of the 33 samples of farmers, 24 corn farmers were male, while the rest were female, namely nine people. The final education of the respondent farm-

ers in Nagari Lingsuang Aua was quite diverse, ranging from elementary school to undergraduate level. The most recent level of education of farmers was SMA or equivalent, and 18 respondent farmers have the last education of SMA or equivalent or equal to 54.54% of the total sample farmers.

Furthermore, there are seven farmers in junior high school, seven in elementary school, and one with his last bachelor's degree. Respondent farmers are generally experienced farmers. It can be seen in the table that 25 farmers have more than ten years of farming experience, and only eight farmers have less than ten years of farming experience.

### 3.3 Procedure for The Implementation of The Subsidized Fertilized Program

The Implementation of the subsidized fertilizer program was supervised by the Ministry of Agriculture, which appoints producers in charge of an area based on geographical proximity. However, there were conditions where other producers could meet the fertilizer needs of other regions due to certain situations. For example, when producers fail to fulfill their responsibilities or the supply of fertilizers available to them is less than 15%, producers shift the fulfillment of fertilizer needs to distributors who meet specific requirements. Furthermore, it was distributed to retailers or fertilizer sellers to be purchased by farmers and farmer groups. Based on the Regulation of the Minister of Trade Number 15/M-DAG/Per/2015 concerning the procurement and distribution of subsidized fertilizers, the government assigned PT. Pupuk Indonesia (Persero) procures and distributes subsidized fertilizers through manufacturers, distributors, and authorized retailers in their respective regions.

Implementing the distribution of subsidized fertilizers begins with preparing the Definitive Plan for Group Needs (RDKK) at the level of farmers who were members of farmer groups. The RDKK that has been prepared was then submitted to the official retailer kiosk. The official retailer kiosk recapitulates the RDKK proposal to be submitted to the distributor. The RDKK, recapitulated to the distributor, was gradually submitted to the District/City Agriculture Service, Provincial Agriculture Service, and Ministry of Agriculture. Furthermore, the Ministry of Agriculture allocates subsidized fertilizer based on the RDKK that has been submitted with its considerations.

**Definitive Plan for Group Needs (RDKK).** The Definitive Plan for Group Needs (RDKK) has a plan for the need for subsidized fertilizers for three planting seasons or one year, which was prepared through farmer group meetings, where the results of the deliberations would be used to propose group fertilizer needs to distributors of agricultural production facilities or authorized retailers of subsidized fertilizers. After the RDKK has been compiled and approved by the Head of the Agriculture Service, the next step is to submit the RDKK to the retailer who handles farmer groups. Based on the implementation instructions for the preparation of the subsidized fertilizer RDKK, the preparation was carried out by a farmer group in deliberation led by the head of the farmer group and accompanied by an agricultural instructor. However, what happened in the field was that the preparation of the RDKK was only carried out by the head of the farmer group, where the planned fertilizer needs were equated with the needs of the previous year without any deliberation. Furthermore, the RDKK was signed by the head of the farmer group and then submitted to the assistant extension officer for inspection and also signed. The official retailer in charge of the Nagari Lingsuang Aua area is UD. Farmer families then retailers submit the RDKK to the

distributor, namely CV Farmer's Flowers. Furthermore, the distributor submits fertilizer needs to producers in the West Sumatra region. The following was a comparison of stages of the preparation of the RDKK according to implementation instructions in the field.

**Table 1.** Comparison of the stages of RDKK delivery according to the implementer's instructions.

No	RDKK Delivery Process	Implementation	Description
1	The official retailer recapitulates the RDKK based on the RDKK that the farmer group has submitted. It is their responsibility to send it to the distributor.	UD. The farmer family conducts the RDKK recapitulation and submits it to the distributor, CV Farmer's Flowers.	appropriate
2	The assessment of the RDKK recapitulation is adjusted to the plan and target of the planting area by the PPL and is known by the Village Head/Lurah.	The recapitulation assessment is carried out by the extension worker and is known by the Nagari.	appropriate
3	PPL compiles RDKK recapitulation from farmer groups to be submitted to the District/City Agriculture Service	PPL compiles a recapitulation and reports it to the Agriculture Service of West Pasaman Regency	appropriate

In Table 1, it can be seen that the process of sending RDKK by authorized retailers at the research location has been carried out in accordance with the Implementation Guidelines for the management of subsidized fertilizers in 2021. UD. Family farmers, as the official retailers, are responsible for recapitulating the RDKK submitted by the farmer group and submitting it back to the official distributor, CV. Farm flowers. Furthermore, the RDKK recapitulation assessment process is carried out by the PPL to be reported to the agricultural service at the West Pasaman Regency level.

**Distribution Stage.** The distribution of subsidized fertilizers is generally distributed by retailers or official merchants of subsidized fertilizers to registered farmer groups. The following compares the distribution of subsidized fertilizers according to the implementation instructions with those in the field. Based on field research, it was found that the official retailers did not reconfirm the RDKK to the farmer groups; based on interviews conducted with the official retailers, confirmation was not carried out because prior to submitting the RDKK to the retailer, the retailer emphasized that the RDKK had to be filled out correctly so that no re-confirmation was necessary. Retailers also instill mutual trust in farmers. The successful Implementation of subsidized fertilizer distribution at the field level requires the role and understanding of all stakeholders. Each Stakeholder must understand their respective roles and duties and cooperate in realizing the successful distribution of subsidized fertilizers.

Based on research conducted in Bangladesh, it turned out that similar results were obtained that mismanagement in fertilizer distribution would cause farmers' dissatisfaction with the program being run. This is especially felt by marginal farmers who have marginal land [12].

**Supervision Stage.** Based on Presidential Regulation Number 15 of 2011 concerning the determination of subsidized fertilizers as goods under supervision, it is necessary to supervise the supply and distribution of subsidized fertilizers. Violations or deviations from the regulations for the procurement and distribution of subsidized fertilizers must be dealt with firmly in accordance with the existing regulations. Based on the research, the supervision of subsidized fertilizers at the research site is generally carried out. However, in the field, there are still some problems that still need to be solved, namely the supervision that is carried out even though it is carried out. However, in its Implementation, it is not routinely carried out periodically or monthly. Based on the results of interviews with field extension workers, supervision will only be carried out from time to time if necessary. Another problem is the redemption price of subsidized fertilizer from retailers to distributors, which still needs to be higher than HET. This is due to additional transportation costs and loading and unloading wages, so farmers buy fertilizer at prices above HET from retailer outlets.

**Table 2.** Comparison of Highest Retail Price And Farmers Price

No	Fertilizer's type	Highest retail price (Rp/Zak)	Average Bought by Farmers (Rp/Zak)	Prices Comparison (%)
1	Urea	112.500	145.182	77,49%
2	NPK	115.000	149.393	76,98%

In the table above, it can be concluded that the price of subsidized fertilizer received by farmers is different from the highest retail price set by the government. However, based on the criteria proposed by Sondang (2001), the accuracy of subsidized fertilizer prices in Nagari Lingkuang Aua is categorized as quite effective because it is in the interval  $60\% < P < 80\%$ . In the table, there are only two types of fertilizers for comparison because the corn farmers in the research area only proposed two types of fertilizers to the RDKK farmer groups, namely Urea fertilizer and NPK fertilizer.

**Table 3.** Effectiveness of type accuracy.

No	Fertilizer's type	Respondents answer		Percentage of appropriate answers (%)
		appropriate	inappropriate	
1	Urea	33	0	100%
2	NPK	33	0	100%

Based on the interval of effectiveness criteria, the effectiveness of the accuracy of the type of fertilizer at the study site was categorized as very effective because it was at the interval of  $90\% < P < 100\%$ . Based on the table, it can be concluded that all respondents can get the type of fertilizer in accordance with that proposed in the RDKK, namely Urea and NPK fertilizers, and the types of fertilizers obtained by farmers at the research location are in accordance with their farming needs.

**Effectiveness of Punctuality.** The effectiveness of punctuality is the availability of fertilizers when farmers need them; for example, when the planting season arrives,

there is no shortage of fertilizers so that farmers can fertilize their crops on time. The results of the timeliness effectiveness research can be seen in the following tables.

**Table 4.** Effectiveness of punctuality.

No	Answers	Response	Percentage punctuality based on answers (%)
1	Punctual	16	48,48%
2	not punctual	17	52,52%
Total		33	100%

Based on the effectiveness criteria interval proposed by Sondang (2001), the timeliness effectiveness of subsidized fertilizer at the research site is categorized as ineffective because it is in the interval 40% P 60%. Of 33 respondents, 17 said they did not get subsidized fertilizer on time. According to one of the farmer groups, this happened because farmers did not get fertilizer during the planting season.

The timeliness of fertilizer use will make the benefits of applying fertilizer to plants optimal. Even in China, the timeliness of fertilizer arrival has been planned using internet-based applications [13].

#### **Effectiveness of Quantity Accuracy**

The indicator of the accuracy of the amount is the match between the amount proposed by the farmer in the RDKK and the amount of fertilizer received by the farmer. The exact results obtained through interviews using questionnaires are as follows.

**Table 5.** Effectiveness of quantity accuracy.

No	Fertilizer's type	Farmer Fertilizer Acquisition	Farmer's fertilizer needs proposal	Comparison of obtained with proposed
1	Urea	8.500Kg	17.436Kg	48,74%
2	NPK	9.150Kg	20.925Kg	43,72%

The Effectiveness of Quantity Accuracy at the research site is categorized as ineffective because the percentage ratio between the fertilizer received by the farmer and the fertilizer proposed by the farmer is 48.74% urea type and 43.72% NPK fertilizer. Where the interval is at 40% P 60%, another exciting thing in the field is the proposed amount of fertilizer and the planting plan. Based on the Regulation of the Minister of Agriculture Number 6/Permentan/SR.140/2/2011, it is mandated that subsidized fertilizer must be in accordance with its designation, namely for farmers, planters, and breeders a maximum of 2 hectares and not a company. However, what happens in the field is that many farmers have a planned planting area of more than 2ha., so the quantity of subsidized fertilizer proposals is also high.

The use of fertilizer subsidies given to farmers must be strictly monitored because this program encourages increased use of chemical fertilizers. If this is not controlled correctly, it will have a negative impact on the environment. This is in line with research conducted in China where input subsidies, in this case fertilizers, will lead to increased use of fertilizers by farmers on their land [14]. In another study, it was explained that the implication of the policy taken was to provide subsidies appropriately with clear designations so that they were not misused and reduced the negative impact



of misappropriation [15]. In another study, to reduce the damage caused by excessive fertilizer use, China implemented a new agricultural policy that focused on increasing the use of technology and the use of more modern machinery [16]. This is in line with research conducted in Bangladesh that excessive fertilizer use will reduce land fertility by as much as 4% [17]. In addition, research conducted in Sri Lanka states that fertilizer subsidies contribute excess N elements to the soil, which will cause an imbalance of soil nutrients[18].

**Effectiveness of Quality Accuracy.** The effectiveness of quality accuracy is the quality of fertilizer farmers obtain according to their needs, not hard or lumpy, and not a mixed fertilizer. The results of quality accuracy in this study can be seen in the following table.

**Table 6.** Quality appropriate accuracy.

No	answer	response	percentage of quality-appropriate
1	Presticies quality	33	100%
2	Unpresticies quality	0	0%

Based on Table 6 above, all respondent farmers get the right quality of subsidized fertilizer, so the accuracy of the quality of subsidized fertilizer in the research location can be categorized as very effective because it is in the 80% P 100% interval. Of all the respondents, no one complained about the quality of the subsidized fertilizers received, either in terms of the physical form of the fertilizer or the content of the content of the following table.

Based on research conducted in Sri Lanka, it was found that the use of fertilizers with the right quality will provide maximum yields without causing damage to land fertility and creating a sustainable environment [19]. The same is true in Sahara Africa [20].

**Effectiveness of Precise Place.**The exact place where farmers should be able to get subsidized fertilizer. According to the Technical Guidelines, subsidized fertilizers can be obtained by farmers at authorized retailers of subsidized fertilizers responsible for farmer groups in their area. The results obtained based on the research can be seen in the following table.

**Table 7.** Place appropriate effectivity.

No	Answer	Response	Percentage of places appropriate (%)
1	Place appropriate	33	100%
2	Not appropriate	0	0%

Based on Table 7, the number of respondents who stated that the fertilizer obtained was in the right place as many as 33 respondents or all respondents. It can be concluded that all farmers in the research location get subsidized fertilizer at official retail kiosks that are designated to meet the needs of subsidized fertilizer in their group. Based on the Sondang criteria interval (2001), the accuracy of the place at the research location is categorized as very effective because it is in the 80% P 100% interval.



## 4 Conclusion

Based on the results of the research that has been done, several conclusions can be drawn that the procedures for implementing Subsidized Fertilizers in Nagari Lingsuara, West Pasaman Regency, have generally been carried out in accordance with the established Technical Instructions for the Implementation of Subsidized Fertilizers. However, there are still some things that still need to be implemented, such as retailers not reconfirming the preparation of the RDKK to farmer groups. Another problem occurs at the monitoring stage, which needs to be carried out periodically (monthly).

Fertilizer subsidy policy is measured by the right six indicators, namely the right price, type, time, quantity, place, and quality. Based on the six indicators, the price accuracy indicator is categorized as quite effective, the time accuracy indicator is categorized as ineffective, and the quantity accuracy indicator is also categorized as ineffective. While the other three indicators, namely type, place, and quality, are categorized as very effective

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