

The Effectiveness of The Fertilizer Voucher Scheme in General Tinio, Nueva Ecija

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Abstract. This study examines the efficacy of a fertilizer voucher scheme program aimed at improving agricultural productivity and mitigating food insecurity. Through a comprehensive analysis of data collected from respondents categorized by educational attainment, employment status, and length of service, the study evaluates perceived effectiveness in terms of understanding, agricultural income, and adaptation. Employing the Kruskal-Wallis H Test, significant differences in perceived effectiveness were identified among groups based on educational attainment and employment status, highlighting variations in perspectives. Specifically, college graduates and employed individuals reported higher levels of effectiveness compared to other groups, indicating potential correlations between educational and occupational backgrounds and program perception. However, no significant differences were observed based on the length of service, suggesting that tenure within the agricultural department does not significantly influence perceptions of program effectiveness. The study further identifies challenges in the targeting, distribution, and redemption of vouchers as key hindrances to the program's overall effectiveness. Notably, misallocation of vouchers and difficulties in accessing fertilizers lead to delays in application, compromising the program's intended impact. In response to these challenges, the study proposes several recommendations. These include enhancing data collection systems for better targeting, improving rural infrastructure to facilitate voucher redemption, investing in farmer education to promote informed decision-making, and implementing robust monitoring and evaluation mechanisms to track program performance. Additionally, the study suggests leveraging mobile technology for efficient voucher distribution, which can streamline administrative processes and enhance communication between administrators and farmers. By addressing these challenges and implementing the proposed recommendations, policymakers and stakeholders can enhance the effectiveness of fertilizer voucher schemes, ultimately contributing to improved agricultural outcomes and food security in the target communities.

Keywords: Agricultural Productivity; Education; Fertilizer Voucher Scheme; Food Insecurity; Rural Infrastructure

1. Introduction

The agricultural sector, a vital component of the global economy, encompasses the cultivation of crops and livestock to sustain human life and drive economic growth (Dela Cruz et al., 1994; Aguilar, 2004; Antonio et al., 2009). Despite its significance, agriculture faces multifaceted challenges ranging from environmental issues to labor disputes and food safety concerns (Esteban, 2008). Transparency emerges as a crucial factor in addressing these challenges, ensuring accountability and fostering trust among stakeholders (Cruz, 2005).

One innovative initiative aimed at enhancing agricultural productivity and sustainability is the Fertilizer Voucher Scheme introduced by the Department of Agriculture in the Philippines (Kusrini and Saleh, 2009). This scheme, launched in 2011, seeks to provide small-scale farmers with access to affordable fertilizers through subsidized vouchers (Aquino et al., 2009). While the program has shown promising results in increasing crop yields and improving farmers' livelihoods (Briones, 2020), challenges such as corruption and logistical constraints have hindered its effectiveness (M. Onofrio, 2018).

This study delves into the importance of transparency in government programs, focusing on the implementation and impact of the Fertilizer Voucher Scheme. By conducting a comprehensive analysis of the scheme's outcomes and challenges, this research aims to shed light on the role of transparency in promoting sustainable agricultural practices and enhancing farmer welfare. The objectives of this study are twofold: firstly, to evaluate the effectiveness and efficiency of the Fertilizer Voucher Scheme in addressing the needs of small-scale farmers; and secondly, to identify key factors influencing the scheme's implementation, including logistical constraints, stakeholder engagement, and policy support. By examining these aspects, this study seeks to contribute to the existing literature on agricultural development and transparency in government programs.

The originality of this work lies in its focus on the Fertilizer Voucher Scheme as a case study of transparency in agricultural policy implementation. By providing insights into the challenges and opportunities associated with the scheme, this research aims to inform future policy decisions and enhance the effectiveness of similar programs in the agricultural sector. The ultimate goal of this research is to determine the effectiveness of the fertilizer voucher scheme. The study also aims to determine the effects and efficiency of the program in the community, and the influence of the program in the agriculture sector, so that even one program has a huge impact for having sustainable development. By this problem, it can be determined that such a program will help a lot to have high-quality trust from farmers, accountability, and credibility by an individual not only in General Tinio, but also in other sectors of the Department of Agriculture.

1. How may the profile of the respondents be described in terms of Age, Sex, Educational attainment, Employment Status (DA Personnel), Length of service (DA Personnel)?
2. How may the effect of the effectiveness of the fertilizer voucher scheme in General Tinio, Nueva Ecija in terms of Level of understanding of the program that is being implemented, Agricultural income, Fertilizer voucher program adaptation?
3. Is there a significant difference between the profile of the respondents and the effectiveness of the fertilizer voucher scheme in General Tinio, Nueva Ecija?
4. What are the challenges encountered during implementation of fertilizer voucher scheme in General Tinio, Nueva Ecija?
5. What are the possible recommendation of this study?

2. Methodology

The research study used a descriptive method to know about the responses of the participants in General Tinio, Nueva Ecija, through the questionnaire. More particularly, the aim of the study was to understand the impact of the fertilizer voucher scheme in the community and to gain deeper insight into how the municipal agriculturist manages all programs in their respective departments. The design of the research study method is to conduct Quantitative research that involves the collection and analysis of the study.

2.1. Sampling Procedure

The sampling procedure for this study involved a stratified random sampling technique to ensure representativeness and accuracy in data collection. Stratification was based on geographical locations within the town of General Tinio, Nueva Ecija, Philippines, considering both rural and urban areas. This approach aimed to capture diverse perspectives and experiences related to the Fertilizer Voucher Scheme.

Within each stratum, households were selected randomly using a systematic sampling method. The sampling frame comprised households registered with the Department of Agriculture and identified as beneficiaries of the Fertilizer Voucher Scheme. A predetermined sample size was calculated to achieve the desired level of precision and confidence interval, considering the population size and expected response rate.

2.2. Respondents

The respondents for this study included farmers who were registered beneficiaries of the Fertilizer Voucher Scheme in General Tinio, Nueva Ecija. Eligibility criteria for inclusion in the study required respondents to have actively participated in the scheme during the specified period. The selection of respondents aimed to ensure diversity in terms of demographics, agricultural practices, and socio-economic backgrounds, thus providing a comprehensive understanding of the scheme's effectiveness and impact.

Efforts were made to include a balanced representation of male and female farmers across different age groups and educational backgrounds. Additionally, variations in farm sizes, crop preferences, and years of participation in the scheme were considered to capture a wide range of perspectives. The inclusion of respondents from both rural and urban areas within General Tinio facilitated a holistic assessment of the scheme's outcomes and challenges across diverse settings.

3. Results and Discussion

3.1. Demographic Profile of Respondents

A total of 100 farmers and DA employees in General Tinio, Nueva Ecija participated in this study. A high percentage of the respondents were of ages 35 to 44 years old (33%), 45 to 54 years old (31%), and 55 to 64 years old (20%), while some were relatively younger with ages 25 to 34 years old (11%). Among the respondents, only a few were of ages 24 and below (3%) and very few were of

ages 65 years old and above (2%). In terms of sex, majority of the respondents were male (83%) while only 17 (17%) of them were female. Further, it was also found that a high percentage of the respondents were high school graduates (20%) and elementary level students (19%). Meanwhile, some were elementary graduates (11%), high school level students (15%), college undergraduates (11%), college graduates (14%), and vocational or technical school completers (10%). In terms of employment status, a total of 10 (10%) DA personnel participated in this study in which, 3 (3%) have job order positions while 7 (7%) have permanent positions. Lastly, it was found that among the DA employees, 3 (3%) have been in the service for the last 1 to 5 years, 3 (3%) have been in the service for the last 6 to 10 years, and 4 (4%) have been in the service for the last 11-15 years.

3.2. Effectiveness of the Fertilizer Voucher Scheme in General Tinio, Nueva Ecija

Table 1. Mean Response and Level of Effectiveness of the Fertilizer Voucher Scheme

Effectiveness	Mean Response	Verbal Interpretation
Level of Understanding of the Program	3.97	Very Effective
Agricultural Income	3.99	Very Effective
Fertilizer Voucher Program Adaptation	4.14	Very Effective

A five-point Likert Scale questionnaire used to assess the level of effectiveness of the fertilizer voucher scheme in General Tinio, Nueva Ecija. In this study, effectiveness was measured in terms of the level of understanding of the program being implemented, agricultural income, and program adaptation. The mean responses per item were calculated and were interpreted using an index (see Appendix A).

Table 1 showed that the fertilizer voucher scheme program have been very effective in terms of level of understanding of the program with an overall mean response of 3.97. Further, the said program was also assessed to be very effective in terms of agricultural income with an overall mean response of 3.99. It can be particularly noted that the fertilizer voucher scheme has been very effective when it comes to providing help to farmers. Lastly, in terms of program adaptation, the fertilizer voucher scheme program was assessed to be very effective with an overall mean response of 4.14. It was notable that the respondents believed that the said program must be continued for a period of time. Despite having been assessed as very effective, efforts to reach extreme or full effectiveness must be made to further improve the fertilizer voucher scheme.

3.3. Significant Difference between the profile of the respondents and the effectiveness of the fertilizer voucher scheme according to demographic characteristics

3.3.1 Age

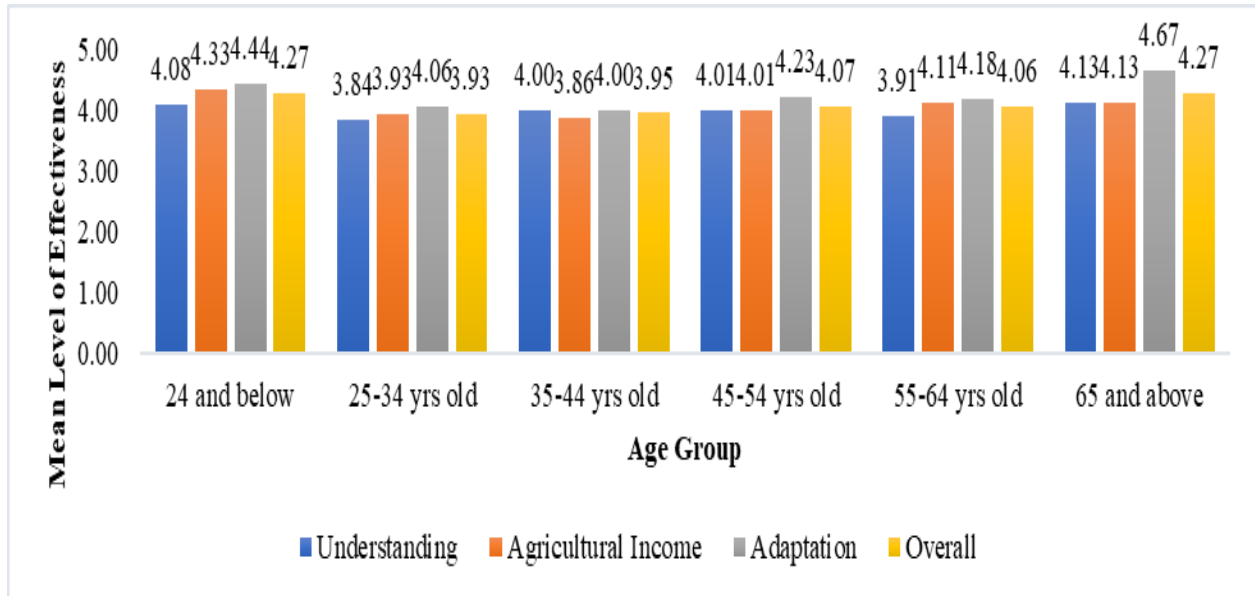


Figure 1 Age

The results of the Kruskal-Wallis H Test showed that there were no significant differences in the level of effectiveness of the fertilizer voucher scheme program in terms of understanding ($X^2(5)=1.383$, $p=0.926$), agricultural income ($X^2(5)=9.027$, $p=0.108$), and adaptation ($X^2(5)=10.590$, $p=0.060$) when respondents were grouped according to age. No significant difference in the overall mean level of effectiveness was detected when respondents were grouped according to age ($X^2(5)=6.264$, $p=0.281$). The mean level of effectiveness per age group was shown in Figure 1. It was notable that no age group has particularly low levels of effectiveness observed.

3.3.2 Sex

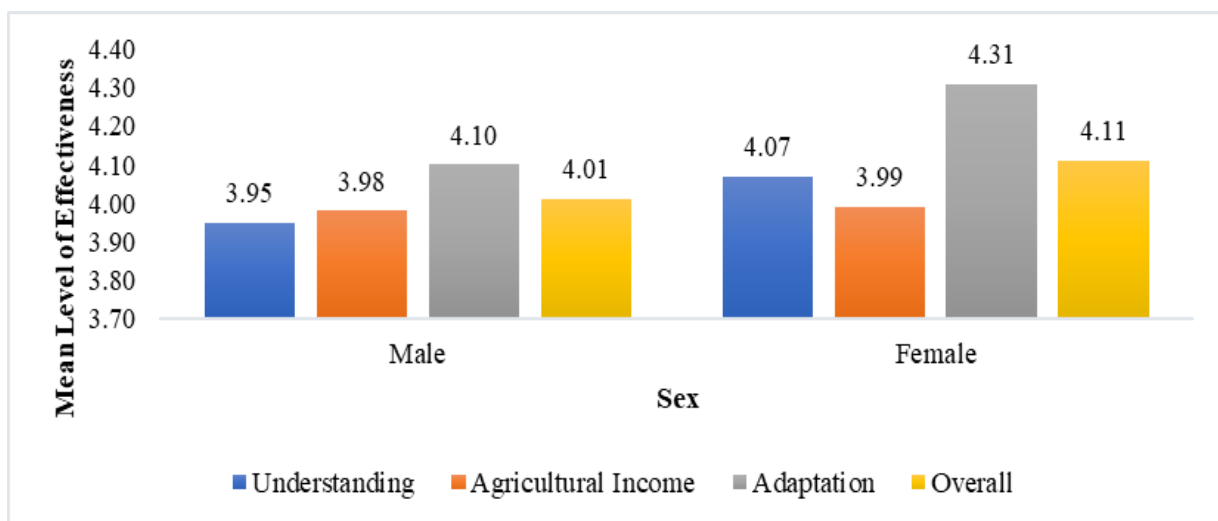


Figure 2 Sex

The results of the Kruskal-Wallis H Test showed that there were no significant differences in the level of effectiveness of the fertilizer voucher scheme program

in terms of understanding ($X^2(1)=1.491$, $p=0.222$), agricultural income ($X^2(1)=0.293$, $p=0.588$), and adaptation ($X^2(1)=3.205$, $p=0.073$) when respondents were grouped according to sex. Further, it was also found that there was no significant difference in the overall mean level of effectiveness when respondents were grouped by sex ($X^2(1)=2.137$, $p=0.144$). The mean level of effectiveness in terms of understanding was 3.95 for males and 4.07 for females. Further, the level of effectiveness in terms of agricultural income was almost the same for both male (3.98) and females (3.99). Lastly, the mean level of effectiveness in terms of program adaptation was 4.10 for males and 4.31 for females.

3.3.3 Educational Attainment

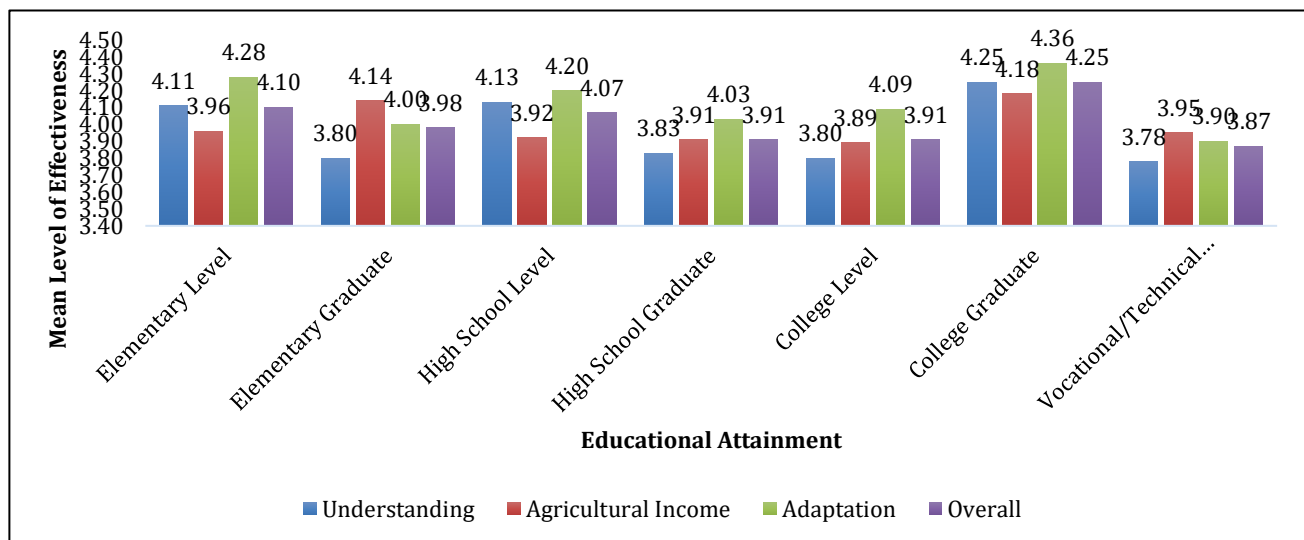


Figure 3 Educational Attainment

The results of the Kruskal-Wallis H Test showed that there were significant differences in the level of effectiveness of the fertilizer voucher scheme program in terms of understanding ($X^2(6)=17.216$, $p=0.009$) when educational attainment of respondents was considered. The mean level of effectiveness according to educational attainment was shown in Figure 3. It was evident that college graduate respondents claimed that the fertilizer voucher scheme program was extremely effective in terms of understanding with a mean response of 4.25. This was significantly higher than the mean level of effectiveness as claimed by respondents who were in the elementary level (4.11), elementary graduates (3.80), high school level (4.13), high school graduates (3.83), college level (3.80), and vocational or technical school completers (3.78). Meanwhile, no significant differences were identified in the mean level of effectiveness in terms of agricultural income ($X^2(6)=9.975$, $p=0.126$) and adaptation ($X^2(6)=11.124$, $p=0.085$) when respondents were grouped according to educational attainment. In terms of the overall mean level of effectiveness, significant differences were found across respondents with difference educational attainment ($X^2(6)=17.853$, $p=0.007$). As shown in Figure 3, college graduates claimed that the fertilizer voucher scheme was an overall extremely effective program with a mean

response of 4.25 while other respondents claimed that the project was only very effective.

3.3.4 Employment Status

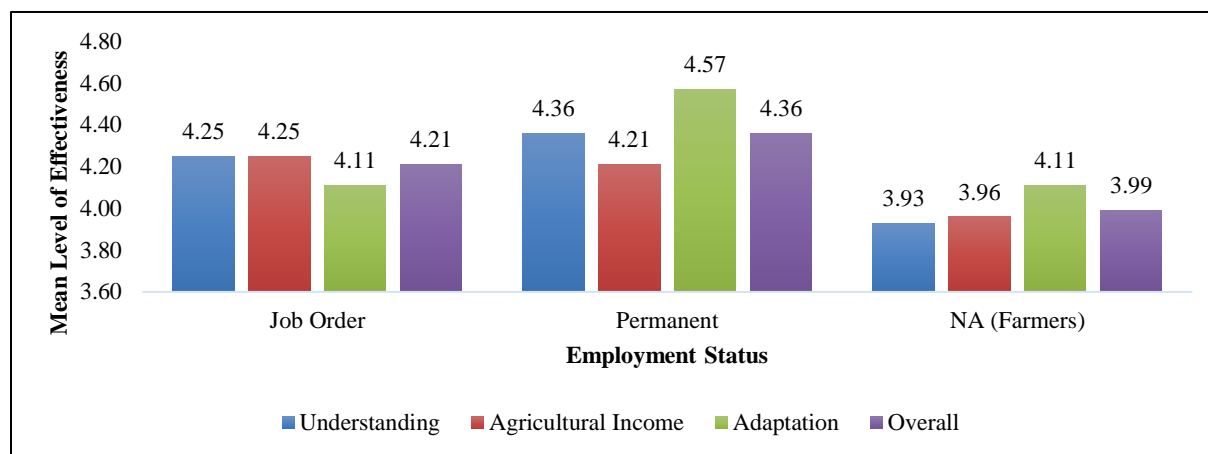


Figure 4 Employment Status

The results of the Kruskal-Wallis H Test showed that there were significant differences in the level of effectiveness of the fertilizer voucher scheme program in terms of understanding ($X^2(2)=7.560$, $p=0.023$), agricultural income ($X^2(2)=6.028$, $p=0.049$), and adaptation ($X^2(2)=0.857$, $p=0.020$) when respondents were grouped according to their employment status. Figure 4 showed that employed respondents, both job order and permanent, claimed higher levels of effectiveness with mean responses of 4.25 and 4.36, respectively, than the farmers who only had a mean response of 3.93. DA employees claimed that the fertilizer voucher scheme program was extremely effective in terms of understanding while farmers claimed that the said program was only very effective. It was also evident that DA employees, both job order and permanent, claimed extreme effectiveness of the fertilizer scheme program in terms of agricultural income with mean responses of 4.25 and 4.21 respectively. Meanwhile, farmers claimed that the said program was only very effective in terms of agricultural income with a mean response of 3.96. In terms of adaptation, a high mean response of 4.57 was observed particularly among permanent employees of the DA implying that they claimed extreme effectiveness of the program. Job order employees and farmers claimed that the fertilizer voucher scheme was only very effective with both having a mean response of 4.11. Lastly, a significant difference was also observed in the overall mean level of effectiveness when respondents were grouped by their employment status ($X^2(2)=10.858$, $p=0.004$). Figure 4 showed that job order and permanent employees of the DA claimed that the fertilizer voucher scheme was overall extremely effective program with mean responses of 4.21 and 4.36 respectively. Meanwhile, farmers claimed that the said program was only overall very effective.

3.3.5 Length of Service

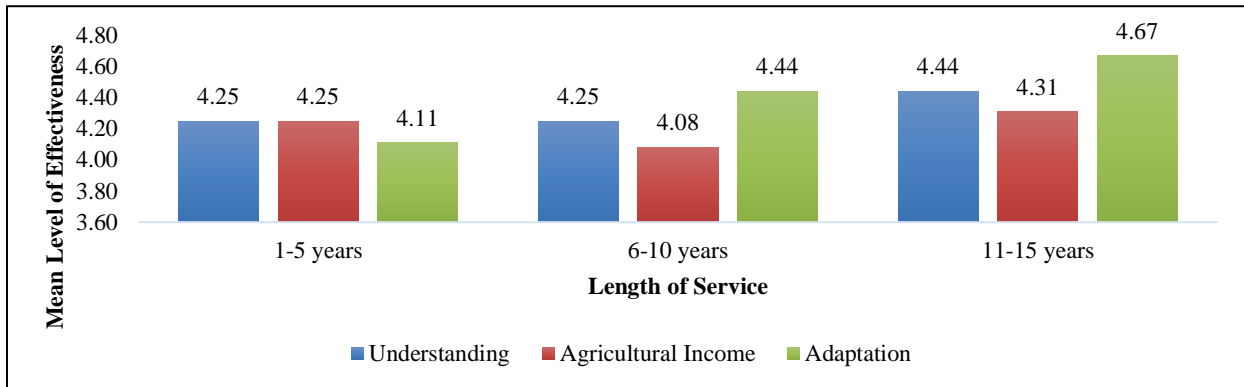


Figure 5 Length of Service

The results of the Kruskal-Wallis H Test showed that there were no significant differences in the level of effectiveness of the fertilizer voucher scheme program in terms of understanding ($X^2(2)=1.765$, $p=0.414$), agricultural income ($X^2(2)=2.625$, $p=0.269$), and adaptation ($X^2(2)=5.417$, $p=0.067$) when respondents were grouped according to their length of service. No significant difference in the overall mean level of effectiveness was detected when respondents were grouped according to length of service ($X^2(2)=4.147$, $p=0.126$). The test was only conducted considering the employed respondents.

The mean level of effectiveness according to length of service was shown in Figure 5. It was notable that employees with a specific length of service have particularly low levels of effectiveness observed.

3.4 The challenges encountered during implementation of the fertilizer voucher scheme.

The effectiveness of the fertilizer voucher scheme has the potential to impact agricultural productivity and alleviate food insecurity, the scheme can achieve straight and reliable management, ensuring that farmers receive the necessary support for increased yields and sustainable farming practices. The challenges in targeting and distribution have implications on the overall effectiveness of the fertilizer voucher scheme. The misallocation of vouchers undermines the intended objective of the scheme. By providing subsidies to larger farmers who already have access to fertilizers, limited resources are diverted away from those who truly need them. This perpetuates inequality and hinders the economic empowerment of smallholder farmers. Government regulations and support play a vital role in strengthening fertilizer management. By establishing policies that promote sustainable fertilizer practices, providing financial incentives for adopting best management practices, and enforcing compliance, governments can encourage responsible fertilizer use and support farmers in implementing effective management strategies. Addition to that are the difficulties in redeeming vouchers and accessing fertilizers result in a delay in the application of fertilizers. Fertilizers are time-sensitive inputs, and any delay in their application can reduce their effectiveness. This not only affects the yield

potential of the farmers but also compromises the overall productivity gains that the fertilizer voucher scheme aims to achieve. The inability to access fertilizers in a timely manner also exacerbates the vulnerability of smallholder farmers to climate change and other external shocks.

4. Conclusions

Based on the findings of this study, it is evident that the Fertilizer Voucher Scheme implemented by the Department of Agriculture has made significant strides in promoting sustainable agricultural practices and supporting small-scale farmers in General Tinio, Nueva Ecija. The scheme has positively impacted farmers' understanding of fertilizer usage, agricultural income, and adaptation to modern farming techniques, particularly among those with higher levels of education and formal employment. Furthermore, the study highlights the importance of transparency and effective management in government agricultural programs. The transparent distribution of vouchers, coupled with collaboration between the Department of Agriculture, local extension offices, and agro-dealers, has facilitated the scheme's success in reaching its intended beneficiaries and ensuring the fair distribution of subsidies. Despite the notable achievements, the study also identifies several challenges, including the need for improved targeting and distribution mechanisms, timely access to fertilizers, and adequate training and support for farmers. Addressing these challenges requires continuous monitoring, evaluation, and adaptation of the scheme to meet the evolving needs of small-scale farmers and enhance its overall effectiveness. In conclusion, the Fertilizer Voucher Scheme serves as a valuable initiative in promoting agricultural sustainability and livelihood enhancement in General Tinio, Nueva Ecija. By addressing the identified challenges and leveraging the scheme's strengths, policymakers and stakeholders can further optimize its impact and contribute to the long-term prosperity of the agricultural sector in the region.

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