



ANALYZING THE EFFECTIVENESS OF THE OPERATIONAL AND ADMINISTRATIVE PROCESS OF ALTERNATE WETTING AND DRYING PROGRAM IN DUMACAA RIVER IRRIGATION SYSTEM

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ABSTRACT

The Alternate Wetting and Drying (AWD) program is a well-established and scientifically endorsed water-saving irrigation technique designed to enhance the efficiency of rice production while significantly reducing water usage. As water scarcity becomes an increasing concern in agriculture, the AWD method offers a promising solution for achieving both productivity and sustainability in rice farming systems. This study evaluates the effectiveness of the AWD program by examining its operational and administrative dimensions across diverse agricultural settings.

The research specifically assesses the program's efficiency, sustainability, and overall impact, with a focus on key factors such as stakeholder participation, policy implementation, and resource management. Utilizing a quantitative research design, data were collected through structured questionnaires administered to rice farmers participating in the program. The study analyzed critical performance indicators, including water-use efficiency, crop yield, economic viability, and farmer adoption rates.

Findings indicate that the AWD program has been highly implemented Dumacaa River Irrigation System, leading to notable improvements in water conservation and crop productivity. However, several challenges persist, particularly in areas related to compliance monitoring, the provision of technical support, and the equitable distribution of resources to smallholder farmers. These barriers limit the scalability and uniform effectiveness of the program.

The study underscores the need for enhanced administrative oversight, increased investment in farmer education and training, and the development of more robust support systems. These measures are essential to optimize the program's outcomes and facilitate its broader adoption. The insights generated from this research contribute to the growing body of knowledge on sustainable irrigation practices and provide practical recommendations for policymakers, development agencies, and agricultural stakeholders committed to promoting climate-resilient and resource-efficient farming.

KEYWORDS – Agricultural Policy, Alternate Wetting and Drying (AWD), Irrigation Efficiency, Program Implementation, Sustainability, Water Management..

INTRODUCTION

Rice is a staple food in the Philippines, which remains one of the world's top rice producers (Department of Agriculture, 2022). As population growth drives higher demand, rice production faces mounting challenges from climate change, frequent typhoons, and especially water scarcity. These issues threaten both the livelihoods of farmers and national food security.

Traditional rice farming methods, such as continuous flooding, consume large volumes of water, making them increasingly unsustainable. In response, water-saving techniques like **Alternate Wetting and Drying (AWD)**—developed by the International Rice Research Institute (IRRI)—offer a more sustainable alternative. AWD allows rice fields to dry intermittently instead of being constantly flooded. According to

OBJECTIVES OF THE STUDY

This study aims to evaluate the implementation and effectiveness of the Alternate Wetting and Drying (AWD) program in Dumacaa River Irrigation System in the Philippines. It seeks to assess the program's operational efficiency,

PhilRice and IRRI, this method can reduce water use by up to 30%, lower production costs, and cut methane emissions by 30%–70%.

To support this shift, the **National Irrigation Administration (NIA)** plays a vital role in managing irrigation systems, providing technical and promoting sustainable water-use practices. In 2016, NIA formally adopted the AWD method through **Board Resolution No. 8323-16**, recognizing its value in improving irrigation efficiency and food security. This study aims to evaluate the implementation and effectiveness of the AWD program in selected rice-growing areas.

It will examine the program's operational, administrative, and policy dimensions to determine its impact and potential for broader adoption in promoting sustainable rice production, particularly in terms of reducing water use, improving crop yield, and lowering production costs. The research also examines the administrative and policy frameworks that support AWD adoption, with a focus on the role of the National Irrigation Administration (NIA) and other relevant institutions.



Additionally, the study investigates the extent of stakeholder participation, especially involvement of farmers who are practicing AWD in Lucena City Province of Quezon. It further aims to identify key challenges that hinder the program's effectiveness, such as issues related to compliance monitoring, technical support, and resource accessibility for smallholder farmers. Based on the findings, the study intends to provide practical recommendations to strengthen the AWD program and promote its wider adoption as a sustainable and scalable water-saving strategy in rice production.

MATERIALS AND METHODS

The material used in the research was a self-assessment survey questionnaire. The questionnaire was quantitatively measuring perception of the farmers in Dumacao RIS in Lucena City. The questionnaires were distributed to collect data from the selected farmers. The questionnaires employed Likert – scale items to gauge agreement or frequency to capture quantitative insights. Respondents will be asked to rate their perception, practices, and experiences on a structured scale, providing quantitative data for analysis.

RESULT AND DISCUSSION

The data reveals significant correlations between the operational and administrative processes of the AWD program and its effectiveness in three key areas: community participation, environmental sustainability, and economic productivity. Key processes like capacity building, program monitoring, and stakeholders' engagement show strong

correlations, particularly with community participation and environmental sustainability. Program implementation also correlates positively, especially with environmental sustainability. However, risks mitigation shows a lower correlation with economic productivity.

The table confirms that all the correlations are statistically significant, with p-values less than 0.05 ($p < 0.05$), indicating that the relationships between the operational processes and the program's effectiveness are reliable and meaningful. This demonstrates that these processes are not only correlated but also likely to have a genuine influence on the success of the AWD program.

In summary, the operational and administrative processes of the AWD program are strongly linked to its effectiveness, particularly in promoting community participation and environmental sustainability.

The processes of capacity building, program monitoring, program implementation, stakeholders' engagement, and risks mitigation all play important roles, with varying degrees of influence on economic productivity. While some processes, such as capacity building and risks mitigation, show weaker correlations with economic outcomes, they are still crucial for the overall success and sustainability of the program.

The consistently positive and statistically significant correlations suggest that these processes are integral to the AWD program's success in achieving its objectives.

Correlations Between Operational and Administrative Processes of AWD and its Program Effectiveness

Operational and Administrative Process	Effectiveness the Program		
	Community Participation	Environmental Sustainability	Economic Productivity
Capacity Building	.81 high corr. <.001	.60 moderate corr. <.001	.29 low corr. .009
Program Monitoring	.80 high corr. <.001	.58 moderate corr. <.001	.35 low corr. .002
Program Implementation	.79 high corr. <.001	.75 high corr. <.001	.47 moderate corr. <.001
Risks Mitigation	.63 moderate corr. <.001	.60 moderate corr. <.001	.26 low corr. .019
Stakeholders' Engagement	.77 high corr. <.001	.81 high corr. <.001	.40 moderate corr. <.001

Note. Cell contains Pearson correlation coefficient, interpretation of its strength, and its corresponding p value. Degree of freedom is 78.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

CONCLUSION AND RECOMMENDATION

The implementation of the Alternate Wetting and Drying (AWD) program in the Dumacao River Irrigation System shows that sex and age do not significantly affect how the program is implemented. However, the age range of farmers, particularly the older farmers (51 and above), does influence the long-term sustainability of the program. This suggests that efforts should be made to engage younger farmers to ensure the future success of the irrigation system.

The study also finds a strong and positive link between the operational and administrative aspects of the program and its overall effectiveness. This means that the success of the program is not just about how the AWD method is applied, but also how well the program is managed, including activities like training and monitoring. Effective administration and coordination of these activities are key to the program's success, as noted by Holcomb et al. (2021).

Because of this connection, the null hypothesis, which suggested no relationship between the operational processes and program effectiveness, is rejected. The findings clearly



show that good management and coordination are essential for the success of the AWD program. Additionally, regular monitoring and evaluation (M&E) are necessary to ensure the program continues to meet its goals, particularly in addressing water scarcity in the lowland areas of Dumacaa River.

While the program has been successful, there is still room for improvement. Continuous feedback from stakeholders and regular assessments will help refine the program and make it even more effective (Palis et al., 2017). By listening to the needs and concerns of those involved, the program can adapt and improve over time.

The success of the AWD program in Dumacaa suggests that it could be expanded to other areas with similar irrigation systems. Doing so would bring additional benefits like better water management and increased agricultural productivity, as seen in other studies (Pascual et al., 2022).

In conclusion, the AWD program's effectiveness is closely tied to its strong operational and administrative management. Engaging younger farmers and ensuring continuous monitoring and improvement will help maintain the program's success and ensure its long-term sustainability.

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