

Assessing the Effectiveness of the UPLAND Program in Enhancing Farmers' Income in Modoinding District

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ABSTRACT

This study analyzed the effectiveness of the UPLAND Assistance Program, implemented by the Department of Agriculture in the Minahasa Selatan Regency, in improving farmers' incomes in Modoinding District. Using a qualitative descriptive approach, data were collected through interviews, observation, and documentation from selected informants. The results showed that the program partially achieved its objectives by improving access to agricultural inputs and infrastructure, though challenges remained in adaptation and coordination. The study implied that strengthening institutional collaboration and continuous technical support were essential for achieving sustainable agricultural development.

INTRODUCTION

Horticultural agriculture plays a crucial role in strengthening national food security, creating jobs, and accelerating regional economic growth. As one of the main pillars of agricultural development, this sector contributes to increasing farmers' incomes and to supplying diverse, nutritious food. (Congreves, 2022) . In Indonesia, demand for horticultural commodities such as potatoes continues to increase, but this growth has not been fully matched by national production capacity, which tends to remain stagnant. (Pronk et al., 2025) . Law No. 18 of 2012 on Food emphasizes that agricultural, plantation, fishery, livestock, and forestry products are an integral part of the national food system that must be managed efficiently and sustainably.

The Indonesian government has established several strategic policies to strengthen the agricultural sector within the framework of sustainable development. One important regulatory instrument is the Minister of Agriculture Regulation No. 273/KPTS/OT.160/4/2007, which emphasizes the development of farmer institutions at the village and sub-district levels. However, a policy focus that is too heavy on productivity often overlooks social and ecological sustainability. (Amaruzaman et al., 2023) . In line with this, (Brunelle et al., 2024) Emphasizes the need for global policy reform to reduce reliance on synthetic inputs to support sustainable development goals.

The sustainability of food production is not only determined by crop yields, but also by the environmental impact of the production process. Farmers' dependence on chemical fertilizers, synthetic pesticides, and hybrid seeds has created significant ecological risks. Intensive use of synthetic inputs has been shown to increase yields in the short term, but threatens soil, ecosystem, and human health (Brunelle et al., 2024). Therefore, the transformation of modern agriculture needs to be directed towards an agroecological approach that includes crop rotation, integrated pest management, and soil and water conservation (Amaruzaman et al., 2023).

North Sulawesi is known as a leading horticultural production area, especially for potatoes, which are a strategic commodity for the regional economy. However, in the last five years, production trends have declined significantly. Pronk et al. (2025) Show that potato production in Indonesia, including North Sulawesi, has stagnated due to limited cultivation technology and support systems. Data from the Ministry of Agriculture and the IFAD report (2025) show that Modinding, one of the province's leading potato centers, has experienced a consistent decline in yields, indicating the ineffectiveness of government interventions. (IFAD, 2025) .

Table 1. Potato Production in North Sulawesi Province and South Minahasa Regency, 2021–2023

Region	2021 (Tons)	2022 (Tons)	2023 (Tons)
North Sulawesi Province	1,201,871	951,391	602,169
South Minahasa Regency	915,000	748,200	547,800

Source: BPS Provinsi Sulawesi Utara

The data in Table 1 shows that potato production in North Sulawesi has declined by 49.9% in the last three years, while South Minahasa Regency has experienced a decline of around 40.1%. This decline indicates that the government's assistance program, launched through subsidies for inputs and agricultural tools, has not been optimal. The disparity between policy plans and field implementation indicates that fundamental weaknesses persist in the design and management of intervention programs (Brunelle et al., 2024; Amaruzaman et al., 2023).

Modinding Subdistrict has agroclimatic conditions ideal for the development of highland horticulture. Located at an altitude of 1,000–1,600 meters above sea level and with 6,640 hectares of agricultural land, this area has great potential for supplying vegetables to eastern Indonesia (JICA, 2013). Fertile land resulting from volcanic activity and adequate rainfall make Modinding a strategic area under the national horticulture policy (Directorate General of Horticulture, 2022).

In an effort to address productivity and market access issues, the government launched the Upland Agricultural Development Project (UPLAND). This program is an integrated initiative between the Ministry of Agriculture, IFAD, and IsDB that aims to increase farmers' incomes in highland areas (IFAD, 2025). By 2024, the project had reached more than 33,000 farming households. It included interventions such as seed distribution, provision of agricultural tools and machinery, and capacity building for farmers through technical training (IFAD, 2025). The increase in potato productivity in Modinding from 9.9 to 15.8 tons per hectare demonstrates the program's potential.

Despite these encouraging results, the UPLAND program still faces several challenges. Problems with aid distribution, limited access to training, and a lack of agricultural extension services mean the program's benefits are not evenly distributed across all farmer groups. As emphasized by Brunelle et al. (2024), public assistance programs often fail to achieve their objectives due to weak reporting and monitoring systems. This has implications for the program's overall effectiveness, especially in improving the welfare of farmers in disadvantaged areas.

A systematic evaluation of the effectiveness of assistance programs is important to ensure that program objectives are achieved in an accountable and sustainable manner. Farmer participation in

program evaluation will strengthen the relevance of policies to on-the-ground realities. (Ticehurst, 2023) highlights that farmers' voices are often marginalized in development discourse, even though they are the primary holders of local knowledge. Meanwhile, Brunelle et al. (2024) note that even science-based policies do not guarantee effectiveness if transparent evaluation mechanisms do not accompany them. Therefore, this study aims to analyze the effectiveness of the South Minahasa District Agriculture Office's UPLAND Assistance Program in increasing farm income in Modinding Subdistrict as a basis for strengthening sustainable agricultural policies in the future.

Effectiveness of Government Assistance Programs in the Agricultural Sector

Government assistance programs in the agricultural sector play a central role in supporting farmers' productivity and welfare, but their effectiveness varies across regions. A study on the rice seed assistance program in Bojongkoneng Village shows that its implementation has not been fully effective due to weak socialization and insufficient technical support, resulting in suboptimal increases in farmer productivity. (Hermawan et al., 2025) . These findings illustrate that, although the program was designed to increase food security, its implementation in the field requires a more comprehensive, participatory approach. In a broader context, international institutions such as IFAD emphasize that the success of agricultural development programs depends heavily on targeted interventions, particularly through rural project financing that supports smallholder farmers with training and infrastructure. This approach has been proven to increase agricultural productivity and farmer income in various developing countries, including Indonesia. (IFAD, 2025) .

The effectiveness of aid programs is also influenced by monitoring mechanisms, cross-sector coordination, and integration with regional policies. The active involvement of local governments in program planning and evaluation is important to ensure that the assistance provided meets local needs. In addition, institutional support and the presence of field assistants play a significant role in bridging the gap between the government and farmers as beneficiaries. Therefore, the program's success is not determined solely by the amount of assistance provided, but also by a systematic approach that prioritizes careful planning, active community participation, and local capacity building.

The Role of Farmer Groups in Productivity and Program Success

Farmer institutions such as farmer groups and farmer group associations (gapoktan) have proven to play an important role in the success of agricultural programs. Active farmer groups serve as vehicles for cooperation, means of technology adoption, and efficient networks for distributing information and resources. Research shows a powerful relationship between the functioning of farmer groups and agricultural productivity, where farmer groups can drive collective improvements in farmer performance. (Handayani et al., 2019) . Through farmer groups, farmers not only obtain technical information but are also involved in decision-making and the implementation of activities in a participatory manner.

This positive relationship is supported by other findings showing that farmer groups play a direct role in increasing productivity and income through effective coordination and social roles. (Mantali et al., 2021; Wibawanti & Hasanuddin, 2022) . In implementing food security programs in villages, synergy between local institutions, such as farmer groups and village governments, is also key to success. When these relationships run harmoniously, the distribution of aid and implementation of programs can be targeted and sustainable. (Hermawan et al., 2025) . Therefore, strengthening farmer group institutions is not only complementary but also a key prerequisite in ensuring the success of agricultural programs more broadly.

Increased Farm Income as an Impact of Agricultural Intervention

Farm income is a key indicator of farmer welfare and a concrete measure of the success of various agricultural development program interventions. Increased income usually results from cost efficiency in

production, increased productivity, and broader market access. Assistance programs such as seed and fertilizer subsidies can directly reduce production costs and increase farmers' profit margins. Empirical studies show that rice farmers in Bone Bolango Regency experienced increased income after receiving agricultural input assistance. (Machmud et al., 2024) , indicating the positive impact of such interventions.

Specifically in the UPLAND Program, there is concrete evidence that beneficiaries have experienced an increase in agricultural income. A study in Mokobang Village, Modinding District, shows that potato farmers participating in the program increased the volume and selling value of their harvest after gaining access to production facilities, training, and institutional support. (Russu et al., 2023). In addition, agricultural diversification approaches, such as intercropping, have proven effective strategies for increasing income. A study on garlic cultivation shows that combining dual cropping systems not only optimizes land use but also significantly increases farmers' income. (Febrilia et al., 2025) . Thus, various program interventions, both technical and institutional, have a tangible impact on strengthening farmers' economies and supporting sustainable agricultural development.

RESEARCH METHOD

This study uses a qualitative, descriptive approach to provide an in-depth description of the effectiveness of the UPLAND assistance program by the South Minahasa District Agriculture Office for farmer groups in Modinding Subdistrict. The focus of this study is to understand how the program is implemented and to what extent it can increase farming income. This approach was chosen because it can explore subjective experiences, social interactions, and informants' perceptions that cannot be measured quantitatively but are highly relevant to assessing the success of community-based programs.

Data for this study were obtained through in-depth interviews, field observation, and documentation of archives and activity reports. Informants were selected purposively based on specific criteria relevant to the research's focus, including department heads, infrastructure division heads, and chairpersons and members of farmer groups who were beneficiaries of the UPLAND program. Data collection techniques included semi-structured interviews, non-participatory observation, and documentation studies to ensure that the data obtained was triangulated and credible. Data analysis was conducted using interactive techniques, which included data reduction, data presentation, and conclusion drawing and verification. (Miles & Huberman, 1984) . During this process, data were selected, categorized, and analyzed thematically to find patterns and meanings related to program effectiveness. The validity of the findings is maintained through the triangulation of sources, techniques, and time, ensuring that the research results are consistent, accurate, and scientifically accountable. (Handoko et al., 2024) .

RESULTS AND DISCUSSION

This study delves deeply into the implementation of the UPLAND Assistance Program by the South Minahasa District Agriculture Office in Modinding Subdistrict. Based on interviews, observations, and documentation, this program has been running since 2021 as part of a collaboration among the Government of the Republic of Indonesia, the Islamic Development Bank (IsDB), and the International Fund for Agricultural Development (IFAD). The main objective of this program is to increase farmers' incomes in the highlands by providing support for production facilities, infrastructure development, technical training, and strengthening farmers' institutions.

The results of the study show that the majority of farmer groups in Modinding District have benefited from the program through high-quality potato seeds, subsidized fertilizers, agricultural tools and machinery, the construction of farm roads, and training activities. However, the effectiveness of the program's implementation varies across groups, depending on the readiness of the farmer group organization, their ability to adapt to environmental conditions, and the intensity of technical assistance

provided by field instructors from the Ministry of Agriculture (2021). The analysis of the interview results was conducted thematically and categorized according to Steers' theory of effectiveness indicators, which consist of goal attainment, integration, and adaptation.

Goal Attainment

This indicator assesses the extent to which the UPLAND program has achieved its primary objective, namely, increasing the productivity and income of farming businesses in the highlands.

Interviews with the Head of the Agriculture Office revealed that "The UPLAND program is a non-repayable grant from IsDB and IFAD that began in 2022. Its main focus is to help farmers in the highlands to become more prosperous through the provision of production facilities, training, and infrastructure." The Head of Infrastructure and Facilities reinforced this information at the Agriculture Service Agency (), who stated that "the assistance provided is not only for potatoes, but also for other horticultural commodities, so that farmers have more diverse sources of income."

From the beneficiaries' perspective, several farmer groups reported increased crop yields and improved work efficiency after receiving assistance. The head of a farmer group in Linelean Village explained that "seed and fertilizer assistance has been invaluable, although some seeds, such as G2, are not well-suited to Modoinding soil. Some machines are also difficult to use due to the steep terrain." This shows that although the program's administrative objectives have been achieved, substantive gains in productivity remain constrained by technical and geographical factors.

Field documentation also shows that during the period 2021 to 2023, potato production in South Minahasa Regency fluctuated, with a downward trend in recent years due to extreme weather and unsuitable seed varieties. Nevertheless, most farmers acknowledge that the assistance has reduced production costs and improved access to agricultural facilities, ultimately improving farming income.

Integration

The integration indicator assesses the extent to which coordination between actors and institutional synergy is effective in supporting the implementation of the program."(Darwis & Rusastra, 2016) .

The interview results indicate that the cooperative relationship between the Agriculture Office, field instructors, and farmer groups is good but not yet optimal. The Head of the Agriculture Office explained that "program coordination involves many parties such as the PIU, POKJA, Bappeda, BKAD, and farmer cooperatives, and provides opportunities for farmer groups to submit reports and input." However, two-way communication remains formal and lacks a routine group-level evaluation mechanism.

The head of the farmer group in Linelean Village added that "training sessions are often held outside the region, such as in Tasikmalaya, so only certain representatives can participate. It would be better if the training were conducted in Modoinding so that all members could be involved." This statement highlights the limitations in the collective learning process, which should strengthen the institutional function of farmer groups.

The head of the farmer cooperative in Modoinding Subdistrict also highlighted the aspect of vertical integration with supporting institutions, stating that "program support for crop marketing has not been realized because the cooperative still faces financial constraints and does not yet have a strong marketing network."

From the observations, coordination at the farmer group level is relatively solid in terms of task distribution and aid management. However, integration among institutions still needs to be strengthened to create continuity across production, distribution, and marketing.

Adaptation

Adaptation indicators describe the ability of farmer groups to adapt to changes in environmental conditions, technology, and policies during program implementation.

An interview with the Head of the Agriculture Office revealed that "extreme weather and limited advanced training are the main obstacles to maximizing the use of aid." The Head of Infrastructure and Facilities echoed this sentiment, stating that "even though nine tractors and four agricultural warehouses have been provided, not all of the equipment can be used due to the hilly topography."

The head of the farmer group in Makaaroyen Village described the conditions in the field in concrete terms, stating that "we often delay planting because of heavy rain, while the fertilizer arrives before planting time, so it cannot be used efficiently. We also do not yet fully understand how to use the new tools."

Despite various obstacles, some groups made adaptive efforts, such as changing planting schedules, diversifying crops, and relying on member cooperation for equipment maintenance. The observations also showed that some groups began implementing environmentally friendly agricultural practices and took the initiative to conduct internal training sessions for farmers to share experiences.

The phenomenon observed in farmer groups in Modinding sub-district during the 2021-2024 period, namely the decline in potato production, clearly illustrates the effectiveness of seeds from program assistance or potato cultivation. This proves that there are problems with the effectiveness of existing seeds and agricultural machinery that have not been maximally socialized and can affect the lives of farmers, as well as the aspirations and hopes of farmer groups for the establishment of a seed feasibility test or potato seed breeding that is suitable for the geography and weather around the Modinding sub-district plantation area, but this is still hampered in the process. During the long rainy season, many farmers feel confused when fertilizer assistance arrives. However, the potato seeds have not yet been planted to allow them to adapt to the weather and temperature in Modinding. However, this tends to minimize the effectiveness of the UPLAND program assistance. Agricultural extension workers also stated that the program is not followed up with regular advanced training, so the group's ability to overcome obstacles remains limited, including the incompatibility of aid tools with regional conditions. (Afriansyah & Womsiwor, 2022) . The farmer groups tend to face these challenges independently without continuous technical assistance. (Munawar et al., 2023) . This shows the limited adaptability of the groups to changes in field conditions.

These findings show that the adaptive capacity of farmer groups is still developing gradually and requires more intensive technical support to ensure the sustainability of the program. Overall, the study's results show that the UPLAND Assistance Program in Modinding Subdistrict has been effective administratively and structurally, particularly in aid distribution and infrastructure development. However, its substantial effectiveness in increasing farmers' income and independence remains moderate.

This program has succeeded in strengthening farmers' basic capacity through physical assistance and training, but it has not fully promoted the economic independence of farmer groups. The main obstacles lie in the incompatibility of assistance with local conditions, weak coordination among actors, and limited adaptability to environmental and technological changes. Thus, the results of this study confirm that the success of agricultural development programs such as UPLAND is not solely determined by resource availability, but also by the effectiveness of institutional coordination, the continuity of technical assistance, and farmers' adaptability to field dynamics.

CONCLUSION

The findings of this research showed that the UPLAND Assistance Program implemented by the Department of Agriculture in Minahasa Selatan Regency achieved partial effectiveness in improving the productivity and income of farmer groups in Modinding District. The program successfully met its

administrative targets through the distribution of agricultural inputs, the construction of rural infrastructure, and the delivery of technical training. However, its substantive impact on increasing farmers' income and self-reliance remained moderate. The study concluded that although the initiative increased farmers' access to seeds, fertilizers, machinery, and market information, several obstacles limited its overall effectiveness, including mismatches between technology and local geography, inconsistent follow-up training, and weak institutional coordination among stakeholders. The capacity of farmer groups to adapt to external challenges such as climate variability and market fluctuations also varied, indicating that continuous institutional support and technical reinforcement were still required.

The implications of these findings suggested that sustainable rural development programs needed to emphasize continuity rather than short-term project cycles. Strengthening local institutional collaboration, especially between the government, agricultural extension workers, and farmer cooperatives, was essential to ensure that the program's benefits extended beyond physical assistance. Future program designs should prioritize adaptive training models that align with local ecological conditions and enable farmers to effectively use agricultural innovations. Moreover, consistent monitoring, transparent evaluation, and participatory planning enhanced accountability and empowered farmer groups to become independent economic actors. By integrating technical, institutional, and social dimensions, the UPLAND program could have evolved from a resource-based intervention into a sustainable mechanism for long-term agricultural empowerment.

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