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# The Influence of Organic Fertilizer Adoption on the Subjective Well-Being of Rice Farming Households

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## ABSTRACT

The intensive and continuous use of inorganic fertilizers can degrade soil fertility and increase production costs, thereby posing a potential threat to the well-being of rice-farming households. As an alternative, the adoption of organic fertilizers is considered more environmentally sustainable and may enhance farmers' subjective well-being. This study aims to examine the effect of organic fertilizer adoption on subjective well-being, measured through indicators of life satisfaction and happiness. The research was conducted in Penanggungan Village, Trawas District, Mojokerto Regency, involving 98 rice farmers comprising both organic and non-organic practitioners. Data were collected through structured interviews using questionnaires and analyzed employing an ordered probit regression model. The results indicate that organic fertilizer adoption has a positive and statistically significant effect on farmers' life satisfaction and happiness. Socioeconomic factors, including the number of dependents, farming experience, and secondary employment, also influence subjective well-being. These findings underscore that farmers' well-being is shaped not only by economic factors but also by sustainable agricultural practices; therefore, expanding organic fertilizer adoption may serve as a viable strategy to promote sustainable farmer well-being.

Keywords: organic fertilizer adoption, subjective well-being, rice farmers

## INTRODUCTION

Agricultural land infertility constitutes one of the most critical challenges faced by farmers (Nugraha Adi et al., 2023) Continuous land utilization without adequate soil conservation practices has led to a decline in soil organic matter content (Naharuddin et al., 2024) A reduction in soil organic matter subsequently contributes to decreasing soil fertility levels (Irawan et al., 2021). Moreover, farming practices that predominantly rely on monoculture systems, without implementing crop rotation, accelerate the process of land degradation (Damanik, 2025). Prolonged monoculture cultivation disrupts the balance of nutrient utilization within the soil, rendering agricultural productivity increasingly vulnerable to decline over time (Harefa et al., 2025). In response to these challenges, farmers tend to depend on inorganic fertilizers as an immediate solution to enhance crop yields (Marwantika, 2021). However, such practices may not provide a sustainable pathway for promoting long-term agricultural resilience and improving farmers' well-being in a sustainable manner.

Inorganic fertilizers are widely regarded as capable of supplying nutrients rapidly and in forms that are readily absorbed by plants (Azzahra et al., 2022) According to the Food and Agriculture Organization of the United Nations, global use of inorganic fertilizers

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in the agricultural sector increased significantly by 46% in 2020 (FAO, 2022). However, repeated application of inorganic fertilizers can exacerbate soil fertility problems (Murnita & Taher, 2021). Excessive and continuous fertilizer use may impair the plant's ability to absorb nutrients optimally, particularly when the quantity of nutrients applied does not correspond to the actual requirements of the crop (Syifa et al., 2020). Nutrients that remain unabsorbed persist in the soil as residues, potentially exerting toxic effects on soil organisms and accumulating over time. The long-term accumulation of fertilizer residues can alter the physical, chemical, and biological properties of the soil. Consequently, soil health deteriorates and fertility declines, ultimately reducing the soil's capacity to support optimal plant growth (Sagitarini & Dewi, 2023).

When soil loses its natural capacity to supply nutrients, the quantity of fertilizer required by farmers increases from one growing season to the next (Pahlepi et al., 2023). This condition entrenches farmers in a dependency on inorganic fertilizers, as land productivity becomes difficult to sustain without their application (Ramadan et al., 2023). Such dependency not only generates ecological consequences in the form of long-term soil degradation, but also imposes significant economic burdens on farmers (Suryadri et al., 2025). Production costs escalate in line with the growing demand for inorganic fertilizers, while crop prices remain volatile and uncertain. This imbalance narrows profit margins and poses a substantial threat to the well-being of farming households (Intan, 2023)

In addressing the challenge of declining agricultural land fertility, one viable solution is the application of organic fertilizers (Mahbub et al., 2023). This trend is reflected in the increasing availability of organic fertilizer products in the market, with the number of registered organic fertilizers rising by 79.67% in 2023 (Ditjen PSP, 2024). According to David et al (2019), the area of organic agricultural land—particularly for organic rice—reached 53,000 hectares in 2019, placing Indonesia 21st globally in terms of organic agricultural land area. Organic fertilizers contribute to improving soil quality due to their organic matter content, which enhances nutrient availability and increases soil water retention capacity (Mendrofa et al., 2024). Warintan et al (2021) define organic fertilizers as products derived from the engineered processing of organic materials, such as plant residues and animal manure, which may be formulated in liquid or solid form and whose decomposition is facilitated by microbial activity. Furthermore, the gradual adoption of organic fertilizers represents a long-term strategy for restoring soil conditions and serves as a key approach to promoting sustainable agriculture (Dewi et al., 2024).

However, despite the significant role of organic fertilizers in enhancing soil fertility, many farmers remain reluctant to adopt them due to uncertainty regarding their effectiveness and yield outcomes (Arifin et al., 2024). Limited knowledge of organic fertilizers, low income levels, age, educational attainment, and restricted access to information are additional factors contributing to the low adoption rate among farmers (Abdullah et al., 2023). In fact, the adoption of organic fertilizers can reduce expenditure on inorganic fertilizers, thereby lowering overall production costs (Syaiful, 2020). Furthermore, the use of organic fertilizers may strengthen farmers' autonomy by decreasing their dependence on inorganic inputs (Alfarisi, 2025). Other benefits include the mitigation of environmental pollution associated with inorganic fertilizer use, the production of safer agricultural commodities for consumption, and the protection of farmers' health from exposure to hazardous substances contained in inorganic fertilizers (Yaser et al., 2023).

Efforts to preserve environmental health and to produce agricultural outputs that are safe for consumption through the use of organic fertilizers may constitute a significant factor influencing farmers' subjective well-being (Xiang et al., 2025). Poor environmental conditions over the long term can adversely affect farmers' physical and mental health, including the incidence of asthma, stress, and anxiety disorders (Pebriyanti et al., 2025), which in turn may shape their level of subjective well-being. Empirical studies conducted in Nigeria and Ghana on the adoption of organic fertilizers indicate that such adoption not only contributes to increased crop yields, but also enhances the overall well-being of farming households (Oyetunde et al., 2021; Martey, 2018). Accordingly, this study aims to analyze the effect of organic fertilizer adoption on the well-being of rice farming households at the local level, to analyze the level of subjective well-being (life satisfaction and happiness) among rice-farming households, and to examine the socio-economic factors that influence the subjective well-being of rice-farming households.

## MATERIALS AND METHODS

This study was conducted over a five-month period, from August to December 2025. The research took place in Penanggungan Village, Trawas Subdistrict, Mojokerto Regency, East Java. The selection of the research site was carried out purposively, based on several considerations. Penanggungan Village is one of the villages with the largest administrative area in Trawas Subdistrict, ranking first with a proportion of 11.68% of the total subdistrict area and encompassing 146.30 hectares of paddy fields. It is followed by Kesiman Village in second place and Jatitijejer Village in third place (BPS, 2023). Furthermore, the choice of this village was also informed by the accessibility and feasibility of data collection. The selection of rice as the focal commodity in this study was grounded in the presence of an organic rice farming community within the research location. This community has consistently implemented rice cultivation practices utilizing organic fertilizers and other environmentally friendly inputs on a sustainable basis. Consequently, this setting provides a relevant and appropriate context for examining the effect of organic fertilizer adoption on farmers' subjective well-being.

The respondent sampling technique employed in this study applied a non-probability sampling approach using the quota sampling method. This method involves selecting samples based on specific predetermined characteristics, namely rice farmers who cultivate paddy, utilize organic fertilizers, and reside in Desa Penanggungan (Zulfikar et al., 2024). The sample size was determined using the Cochran formula. Cochran's formula is presented by equation 1.

$$n = \frac{Z^2 pq}{e^2} \quad (1)$$

Where $\boldsymbol{n}$ the minimum sample size required to adequately represent the total population, **Z** the standard normal deviation corresponding to a 5% level of significance, **p** the assumed probability of success, set at 50% (0.5), **e** the margin of sampling error.

Based on the aforementioned formula, the number of samples to be obtained can therefore be determined by equation 2.

$$n = \frac{1.96^2(0.5)(0.5)}{0{,}1^2} = \frac{0.9604}{0{,}01)} = 96{,}04 \quad (2)$$

Based on the sample size calculation conducted, the minimum required sample for this study was 96.04 rice farmers, which was subsequently rounded to 96 respondents. The sampling procedure in this study did not primarily aim to proportionally represent the total number of organic farmers. However, given that there were only 31 organic

farmers in Desa Penanggungan, the researcher included the entire population of organic farmers as respondents. The remaining 67 respondents were selected from non-organic farmers residing in Desa Penanggungan. Accordingly, the total number of respondents involved in this study amounted to 98 farmers domiciled in Desa Penanggungan.

The type of data employed in this study consists of primary data obtained through structured interviews using questionnaires administered to rice farmers in Penanggungan Village. Primary data refer to information collected directly through on-site observation and firsthand data collection processes (Siregar et al., 2022). The primary data utilized in this research include farmers' socio-demographic and economic characteristics (age, number of dependents, farming experience, education level, landholding size, secondary occupation, savings, and loans), as well as variables related to the adoption of organic fertilizers, life satisfaction, and farmers' happiness. Secondary data used in this study were derived from relevant literature sources, including scholarly articles, publications from the Badan Pusat Statistik (BPS), and the official profile of Penanggungan Village. The data collection method applied in this research was a structured interview technique, conducted through direct face-to-face questioning with respondents, guided by a questionnaire instrument. The respondents in this study were farmers residing in Penanggungan Village.

The study employed an ordered probit regression analysis to examine the effect of organic fertilizer adoption on the subjective well-being of farming households in Penanggungan Village. Ordered probit regression is a type of non-linear regression in which the dependent variable is categorical in nature (Salsabila et al., 2022). This method is appropriate for modelling the relationship between an ordinal-scale dependent variable and one or more independent variables (Guo et al., 2025). An ordinal variable is a categorical variable with a natural ordering, for example, "very poor," "poor," "good," and "very good" (Setiawan et al., 2025). Accordingly, ordered probit regression can be applied to analyze the factors influencing life satisfaction by asking respondents to evaluate their level of satisfaction with their lives using a Likert scale. The primary focus of this study is to assess how the adoption of organic fertilizer influences subjective well-being, as measured by two indicators: happiness and life satisfaction.The subjective variable serves as the dependent variable and consists of five categories. For the life satisfaction indicator, the categories are defined as: (1 = very dissatisfied; 2 = dissatisfied; 3 = somewhat satisfied; 4 = very satisfied; 5 = extremely satisfied). For the happiness indicator, the categories are defined as: (1 = very unhappy; 2 = unhappy; 3 = neutral; 4 = happy; 5 = very happy).

The ordered probit model is shown by equation 3. Where $\boldsymbol{yi}$ denotes subjective well-being (happiness and life satisfaction), which constitutes an ordinal dependent variable, $\boldsymbol{x_i}$ denotes the independent variables influencing subjective well-being, namely age, farming experience, level of education, and the use of organic fertilizer, $\boldsymbol{\beta}$ denotes the vector of parameters to be estimated, $\boldsymbol{u_i}$ denotes the random error term associated with the $i$-th observation, $\boldsymbol{i}$ denotes $1,2,3,\dots,N$.

$$yi*=xi'\beta+ui \quad (3)$$

## RESULT AND DISCUSSION

### Descriptive Statistics of Respondents

Table 1 presents the descriptive statistics of the variables employed in this study. Based on the processed sample data, a total of 98 rice farmers were identified, of whom 67% practiced non-organic farming, while the remaining 31%

engaged in organic rice cultivation. The relatively low proportion of organic rice farmers (31%) indicates limited interest among farmers in adopting organic agricultural systems. This finding is consistent with the study conducted by Abdullah et al (2023), which reported that the adoption rate of organic fertilizers among farmers remains considerably low. Although farmers are generally aware of the existence of organic fertilizers, they exhibit limited willingness to implement them in their agricultural practices.The average scores of the subjective well-being indicators among rice farmers in Penanggungan Village were 3.14 for life satisfaction and 3.67 for happiness. These values suggest that, overall, rice farmers in the village perceive themselves as satisfied and happy with their current living conditions.

The sociodemographic characteristics of rice farmers in Penanggungan Village indicate that the average age is 52 years, suggesting that the majority of rice farmers in the village remain within the productive age category. The average farming experience is 29 years, reflecting that these farmers have been engaged in agricultural activities for a considerable period of time. In addition, the average household size ranges from one to three members, including children who are classified as being of non-productive age (under 16 years old). The average landholding size among rice farmers in Penanggungan Village is approximately 835 square meters. A total of 52% of rice farmers have access to loans or credit facilities, indicating a relatively high level of financial access within the farming community. In contrast, only 20% of rice farmers report having savings, whether in the form of livestock, gold, or cash, suggesting that the overall savings rate among rice farmers remains relatively low.

As many as 45% of farmers engage in secondary occupations in addition to their rice farming activities, indicating that rice farmers possess alternative or supplementary sources of income that contribute to meeting their daily needs. On average, the educational attainment of rice farmers in Penanggungan Village is equivalent to primary school level; however, a number of farmers have pursued education up to the senior high school level.

The adoption of organic fertilizers constitutes a strategic action and a deliberate decision undertaken by farmers to accept, experiment with, and ultimately utilize organic fertilizers on a sustained basis (Pratama, 2022). This decision is grounded in the expectation that the application of organic fertilizers can yield optimal and significant outcomes for the long-term sustainability of their farming enterprises (Pratama et al., 2025). The adoption process is frequently driven by heightened awareness of environmental impacts and the pursuit of improved production quality (Wahyudyanti et al., 2023). Farmers who transition to organic practices perceive this shift as a long-term investment in the future viability and productivity of their agricultural land.

**Adoption of Organic Fertilizers**

The adoption of organic fertilizers constitutes a strategic action and decision undertaken by farmers to accept, experiment with, and ultimately utilize organic fertilizers on a sustained basis (Pratama, 2022). This decision is grounded in the consideration that the use of organic fertilizers can yield optimal and significant outcomes for the long-term sustainability of their farming operations (Pratama et al., 2025). The adoption process is frequently driven by an awareness of environmental impacts and the pursuit of improved production quality (Wahyudyanti et al.,2023). Farmers who transition to organic practices perceive this shift as a long-term investment in the future viability and resilience of their agricultural land.

**Tabel 1**
**Descriptive Statistics of Respondents**

| Variabel Name | Definition | Average | Standard Deviation |
|---|---|---|---|
| Happiness *(Kebahagiaan)* | Farmers' happiness (1 = very unhappy; 2 = unhappy; 3 = neutral; 4 = happy; 5 = very happy). | 3,637 | 0,743 |
| life satisfaction (Kepuasan hidup) | Farmers' satisfaction (1 = very dissatisfied; 2 = dissatisfied; 3 = somewhat satisfied; 4 = very satisfied; 5 = extremely satisfied). | 3,153 | 0,679 |
| Adoption of organic fertilizers | Farmers apply organic fertilizers in the cultivation of rice crops (1 = yes; 0 = no). | 0,337 | 0,475 |
| Farmer's age | Farmer's Age (Years) | 51,184 | 9,024 |
| Number of dependents | The number of individuals residing within a single household. | 1,561 | 1,046 |
| Farming experience | Farming experience (years) | 29,051 | 10,591 |
| Level of education | Farmer"s level of education (years) | 7,143 | 2,449 |
| Land area | The land area utilized for rice cultivation ($m^2$). | 834,184 | 929,377 |
| Side job | Secondary occupation of the farmer (1 = yes; 0 = no). | 0,469 | 0,502 |
| Savings | Farmers' ownership of savings (1 = yes; 0 = no). | 0,224 | 0,443 |
| loan | The farmer has previously obtained a loan (1 = yes; 0 = no). | 0,459 | 0,501 |

One of the primary considerations in the adoption of organic fertilizers is their capacity to provide long-term benefits for soil condition and health (Munthe, 2025). In contrast to inorganic fertilizers, which may lead to the gradual degradation of soil structure over time (Syamsiyah et al., 2023) organic fertilizers function to restore and revitalize the soil's microbial ecosystem (Yunanda et al., 2022). The sustained application of these natural-based fertilizers contributes to enhanced water-holding capacity, reduced erosion risk, and improved soil pH balance (Zebua et al., 2025). Therefore, organic fertilizers serve not merely as an immediate source of nutrients, but as structural and biological ameliorants that preserve land vitality from one planting season to the next.

Research conducted by Anjar et al (2025) indicates that livestock manure–based organic fertilizer contains essential nutrients, including organic carbon (C-organic), nitrogen (N), phosphorus (P), and potassium (K). Organic carbon functions as the primary component of organic matter; thus, it can be inferred that organic fertilizer possesses complex and diverse nutrient contents that play a vital role in enhancing soil fertility. In addition to directly supplying nutrients, the organic matter contained in such fertilizers stimulates the activity of beneficial soil

organisms, such as earthworms and decomposer microorganisms (Hartatik et al., 2021). Furthermore, the use of organic fertilizers, including those produced independently by farmers, enables a substantial reduction in dependence on and expenditure for synthetic chemical fertilizers, whose prices are often volatile and continuously increasing (Mohammad et al., 2025). This reduced reliance directly minimizes farm input costs, which constitute a significant component of total agricultural production expenses (Firdaus & Nugroho, 2024). Moreover, the application of organic fertilizers contributes to safeguarding farmers' health by decreasing exposure to inorganic fertilizers that contain chemical compounds potentially harmful to human health (Yaser et al., 2023).

**Farmers' Satisfaction and Happiness in Rice Farming**

Figure 1 presents the results of the measurement of rice farmers' well-being, assessed using two key dimensions of subjective well-being: satisfaction and happiness. The diagram illustrating the satisfaction variable indicates that the majority of farmers (57%) reported their level of satisfaction as "moderate" or "neutral." Although most respondents perceived their satisfaction as average, a considerable proportion (27%) reported feeling satisfied. Meanwhile, 12% indicated that they were "dissatisfied," 1% reported being "very dissatisfied," and only 1% stated that they were "very satisfied." These findings suggest that the majority of farmers are situated within a neutral to moderately satisfied range of subjective well-being. In contrast, the happiness variable indicates that the majority of farmers (52%) reported their level of happiness to be in the "happy" category. Meanwhile, 30% of respondents stated that their happiness was in the "neutral" category, and the proportion of farmers who reported being "very happy" (10%) was substantially higher than the proportion reporting being "very satisfied" (1%).

Overall, the surveyed rice farmers tended to report higher and more positive levels of happiness (52% happy, 10% very happy) compared to their levels of life satisfaction (57% neutral). This finding indicates the presence of a discrepancy. They may evaluate their living conditions in a cognitively neutral manner (a rational assessment of life circumstances), while simultaneously experiencing more dominant positive affect (emotional states) in their daily lives, as reflected in the higher levels of reported happiness. The substantial proportion of respondents categorized as "happy" (52%) and "very happy" (10%) suggests that farmers tend to experience a greater prevalence of positive emotions in their everyday lives. This pattern may be attributed to non-economic factors, such as a strong sense of community belonging, satisfaction with rural lifestyles, or the broader sense of meaning derived from their way of life. These factors may enhance affective well-being, even when their rational evaluations of life conditions (life satisfaction) remain relatively neutral.

**The Effect of Organic Fertilizer Adoption on Well-being**

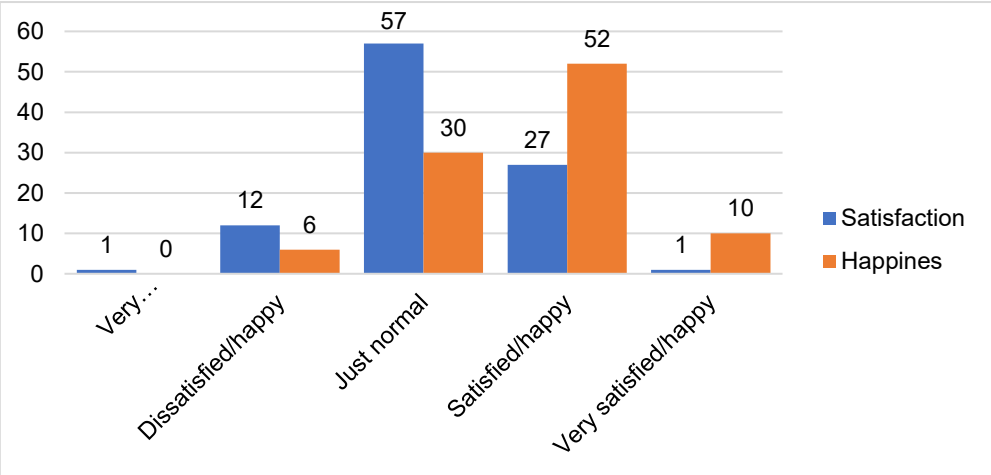
Based on the results of the analysis conducted, it was found that the value of Prob > chi² for satisfaction = 0.003 and the value of Prob > chi² for happiness = 0.024 indicate that all variables simultaneously exert a significant effect on the satisfaction and happiness of rice farmers in Penanggungan Village.

Based on the results of the analysis, the age variable was found to have a negative and statistically insignificant effect on the satisfaction and happiness of rice farmers. As age increases, it may influence farmers' decision-making processes. Moreover, advancing age tends to be associated with a decline in physical performance, which may ultimately affect farm productivity (Gusti et

al., 2021). The significance pattern observed in this variable reflects an inverted U-shaped relationship. This suggests that at a certain stage of life, farmers may experience a decline in happiness as they grow older. Rahmadani et al (2024) argue that age can affect an individual's health, as the aging process leads to mood changes, memory decline, and cognitive impairments such as Alzheimer's disease. Older farmers tend to face increasing psychological burdens, declining physical capacity (particularly when health deteriorates), and concerns regarding the absence of a successor to continue their farming activities. These factors may collectively impose psychological stress, thereby reducing their level of happiness (Pratiwi & Moeis, 2022).

Meanwhile, the statistical test results indicate that the number of household dependents has a negative and significant effect on rice farmers' satisfaction, with a p-value of 0.001. This implies that an increase in the number of household dependents significantly reduces the level of satisfaction experienced by rice farmers. A larger number of dependents leads to higher household expenditures required to meet basic needs. Such economic pressures often compel farming households to seek additional sources of income, which may ultimately increase the burden borne by farmers. This finding is consistent with Utari et al (2022), who argue that a higher number of non-working household members increases household expenditures and potentially affects farmers' well-being. However, although the number of dependents exerts a negative effect, it does not significantly influence farmers' happiness, as indicated by a p-value of 0.798. This suggests that farmers' happiness is not solely determined by the magnitude of family dependency burdens but is more strongly influenced by non-economic factors.

Farming experience demonstrates a positive but statistically insignificant effect on rice farmers' satisfaction, as reflected by a p-value of 0.639. This indicates that the longer farmers are engaged in agricultural activities, the more skills and knowledge they accumulate; however, such improvements are not sufficiently strong to significantly enhance their level of satisfaction. Farmers' satisfaction appears to be more strongly influenced by other factors, particularly economic variables such as income, production costs, and output price stability.




Source: Processed primary data, 2025

**Figure 1**
**Farmers' Satisfaction and Happiness**

**Table 2**
**The Effect of Organic Fertilizer Adoption on Farmers' Satisfaction and Happiness**

| | Satisfaction | | | Happines | | |
|---|---|---|---|---|---|---|
| Variable | Coef. | z | P>\|z\| | Coef. | z | P>\|z\| |
| Age | -.0009181 | -0.04 | 0.969 | -.0408601 | -1.82 | 0.069* |
| Dependent | -.4357353 | -3.46 | 0.001*** | -.0294306 | -0.26 | 0.798 |
| Experience | .0095131 | 0.47 | 0.639 | .0360789 | 1.87 | 0.061* |
| Education | .0303954 | 0.56 | 0.574 | .0079556 | 0.15 | 0.877 |
| Side Job | .4339638 | 1.65 | 0.100* | .4410997 | 1.73 | 0.083* |
| Land | -.0001146 | -0.84 | 0.400 | .0001584 | 1.25 | 0.213 |
| Loan | -.1338409 | -0.54 | 0.591 | .1407367 | 0.59 | 0.556 |
| Savings | .0217091 | 0.07 | 0.943 | .110805 | 0.38 | 0.702 |
| Adoption | .9264349 | 2.9 | 0.003*** | .6753045 | 2.26 | 0.024 ** |
| Log likelihood | -81.884759 | | | -96.977697 | | |
| Number of obs | 98 | | | 98 | | |
| LR chi2(9) | 36.36 | | | 22.14 | | |
| Prob > chi2 | 0.0000 | | | 0.0084 | | |
| Pseudo R2 | 0.1817 | | | 0.1025 | | |

Description**:** significant at the level ***1%, **5%, and *10%
Source: processed primary data, 2025

Nevertheless, this finding is consistent with Sugiantara & Utama (2019), who state that longer farming experience enhances farmers' skills and consequently improves agricultural productivity. In contrast to satisfaction, farming experience has a positive and statistically significant effect on farmers' happiness, with a p-value of 0.061. This suggests that more extensive farming experience enhances adaptive capacity, acceptance of farming risks, and a sense of meaning and tranquility in agricultural activities, thereby contributing significantly to the happiness of rice farmers.

The level of education exhibits a positive but statistically insignificant effect on both satisfaction and happiness among rice farmers. This finding indicates that higher levels of formal education do not necessarily lead to an immediate increase in farmers' subjective well-being. Although, theoretically, education is expected to enhance farmers' capacity to adopt innovations, manage farm enterprises, and make more rational decisions (Burhansyah, 2018), in practice, increased formal education has not demonstrated a strong influence on farmers' satisfaction and happiness. This condition suggests that farmers' subjective well-being is more strongly affected by factors beyond formal education, such as economic conditions, income stability, and farming experience.

Employment status has a positive and statistically significant effect on both satisfaction and happiness among rice farmers, with p-values of 0.100 for satisfaction and 0.083 for happiness. This indicates that farmers who have additional employment outside their primary farming activities experience higher levels of subjective well-being. Employment provides supplementary income and enhances economic security, thereby contributing to greater satisfaction. Furthermore, having additional employment fosters a stronger sense of

productivity and social role, which ultimately exerts a positive influence on farmers' happiness. This finding aligns with Dewi & Yasa (2024), who assert that income is closely related to the fulfillment of household needs and, consequently, to the level of farmers' well-being when they are able to meet those needs.

Landholding size demonstrates a positive but statistically insignificant effeon both satisfaction and happiness among rice farmers, as indicated by p-values of 0.400 for satisfaction and 0.213 for happiness. This finding suggests that a larger landholding does not necessarily translate into higher subjective well-being. One explanation for this insignificant effect is the relatively small average landholding size, approximately 800 m². Such limited land area restricts potential increases in production and income, rendering the impact on satisfaction and happiness negligible. Although, theoretically, larger landholdings may enhance production and income—consistent with Alfrida & Trisna (2021)Alfrida and Noor (2017), who argue that greater land size improves farmers' well-being—in practice, well-being remains influenced by other factors, including land productivity, production costs, and price stability (Hartati et al., 2020).

Access to loans has a positive but statistically insignificant effect on both satisfaction and happiness among rice farmers, with p-values of 0.591 for satisfaction and 0.556 for happiness. This indicates that access to credit has not directly enhanced farmers' subjective well-being. Although loans can facilitate access to production capital (Susanto et al., 2022), they also impose repayment obligations, which may offset the perceived benefits. Consequently, their overall effect on farmers' satisfaction and happiness remains statistically insignificant.

Savings also exhibit a positive but statistically insignificant effect on satisfaction and happiness, as reflected by p-values of 0.943 and 0.702, respectively. This finding suggests that savings ownership has not directly increased farmers' subjective well-being. Empirical evidence shows that only 20 out of 100 respondents reported having savings, indicating that the majority of farmers lack adequate financial reserves. As a result, the presence of savings has not exerted a meaningful impact on satisfaction or happiness. Susanto et al (2022) similarly argue that savings do not significantly affect well-being, as savings represent a voluntary decision to defer consumption for purposes such as investment, lending, or simply holding money.

The adoption of organic fertilizer in this study demonstrates a positive and statistically significant effect on both satisfaction and happiness among rice farmers, with p-values of 0.003 and 0.024, respectively. The regression results indicate positive coefficients for the organic fertilizer adoption variable, confirming its favorable effect on farmers' subjective well-being. Rice farmers who adopt organic fertilizers report higher levels of satisfaction and happiness compared to those who do not adopt such practices. This may be attributed to several beneficial factors, including reduced production costs. Moreover, the use of organic fertilizers helps protect farmers' health by reducing exposure to inorganic fertilizers (Purbosari et al., 2021). Consistent with Delin et al (2024), organic fertilizer use provides long-term benefits by improving soil quality, reducing reliance on costly agricultural inputs, and enhancing crop productivity. These findings suggest that the adoption of organic fertilizers plays a crucial role in improving farmers' subjective well-being. By reducing dependence on chemical fertilizers, which are subject to price fluctuations, organic practices can lower long-term production costs. Additionally, improvements in soil fertility and quality

contribute to greater harvest stability (Dewi & Afrida, 2022), ultimately increasing farmers' satisfaction. Environmentally sustainable farming practices also generate a sense of security regarding land health and production quality, while fostering moral satisfaction and pride in contributing to environmental sustainability. Emotionally, these factors enhance the overall happiness of rice farmers (Tjilen et al., 2024).

## CONCLUSION

Research indicates that the adoption of organic fertilizers exerts a statistically significant and positive effect on the subjective well-being of rice farmers. Farmers who adopt organic fertilizers report higher levels of satisfaction and happiness, attributable to economic benefits such as the potential reduction in production costs and improvements in soil fertility, as well as a sense of moral fulfillment. Although the majority of farmers are categorized as experiencing a "moderate" level of satisfaction, they tend to report higher levels of happiness, frequently describing themselves as "happy." Furthermore, engagement in secondary employment demonstrates a significant positive effect on both satisfaction and happiness. The number of dependents has a significant negative effect solely on satisfaction, whereas farming experience and age exhibit significant effects exclusively on happiness.

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