



# Improvement Welfare Farmer through Sustainable Land Management A Study of Economic and Environmental Outcomes in Agroecosystem

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**Abstract** *Changes climate and degradation ongoing land globally causing challenge significant for farmers , especially in increase productivity and maintaining sustainability environment. Management land sustainable become approach important For overcome problem said. Research This aiming For analyze impact implementation technique management land sustainable to welfare economy farmers and quality environment in the research area . Research This use method quantitative descriptive with sample as many as 100 farmers have apply technique like rotation plants , agroforestry , and use fertilizer organic . Data collected through survey , observation field , and interviews , then analyzed use statistics descriptive and multiple linear regression. The results of the study show that technique management land sustainable increase income farmer up to 25% and repair quality land and water conservation . On the other hand, the obstacles main implementation technique This covering lack of knowledge technical and cost high start . Research This give proof empirical that management land sustainable can increase welfare economy farmers and support effort conservation environment , so that worthy For pushed in policy agriculture national .*

**Keywords** Management land sustainable , welfare farmer , conservation environment , agroforestry , practices agriculture

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## 1. Introduction

In a number of decade lastly , changes climate and degradation land has become significant global problems , especially in sector agriculture . Agriculture sustainable has become urgent need use ensure availability food , maintain balance ecosystem , and improve welfare farmer small often affected directly by change environment and economy . Management land sustainable offer an integrative approach in maintain productivity land agriculture at a time guard health ecosystem (Gonzalez-Sanchez et al., 2021; Lal et al., 2020; Smith et al., 2019). Draft This covers practices like rotation plants , agroforestry , and use fertilizer organic , which has proven contribute to stability ecology and improvement results harvest term long .

In many developing countries , especially in Indonesia, farmers face challenge big in maintain welfare economy in the middle uncertainty climate and prices commodities (Rahman et al., 2021; Suharto et al., 2020; Putra et al., 2019). Research This important Because Still Lots farmers who have not apply technique management land sustainable . The absence of understanding and technology often become inhibitor main implementation technique said . Through study this , it is expected can identified factors that can increase welfare economy farmer through approach management sustainable land .

Theory management land sustainable put forward approach holistic that is not only focus on improvement results , but also maintain quality land For generation upcoming . Next This is data that shows connection between practice management land sustainable and its impact to welfare farmer :

Table 1. Relationship Between Practices Sustainable Land Management

<b>Sustainable Land Management Practices</b>	<b>Impact on Economic Welfare</b>	<b>Environmental Impact</b>
Crop Rotation	Long-term productivity improvements	Increase soil fertility
Agroforestry	Reducing the risk of erosion and water conservation	Preserving biodiversity
Use of Organic Fertilizer	Reducing external input costs	Improve soil structure

Study about impact management land sustainable has done in a way wide . For example , Gonzalez-Sanchez et al. (2021) examined influence agroforestry to stability income farmers in Latin America, and found improvement welfare term long . Besides The study by Lal et al. (2020) shows that practice rotation plants in the field dry succeed lower risk fail harvest up to 30%. Smith et al. (2019) also concluded that use fertilizer organic capable press cost production , so that give benefit economy for farmer .

Although Lots study has highlight benefit management land ongoing , still few focus on impact its economy in a way directly to welfare farmers in Indonesia. In addition that , research previously often focus on one or two technique certain only , without to study combination practice more sustainable holistic in context agroecosystem .

Study This offer innovation in approach holistic , review various practice management land sustainable in context agroecosystems , especially in Indonesia. The focus is identify combination the most effective technique in increase welfare

economy farmers , with consider variability climate and conditions specific land in the area .

Study This aiming For analyze impact implementation practice management land sustainable to welfare economy farmers in Indonesia, at the same time to study implications ecological from various technique management applied land .

## 2. Method

Study This use approach quantitative descriptive purposeful For identify and measure influence practice management land sustainable to welfare farmers in the research area . Methods This chosen For obtain numeric data that can be describe condition economy and environment based on variable established research .

Population study This is farmers in certain areas in Indonesia who have apply or interested For apply technique management land sustainable . Purposive sampling technique is used For choose sample , with criteria farmers who have adopt at least one practice management land sustainable during more from One year . Size sample determined as many as 100 farmers For give representative and valid results .

Instrument main study This is questionnaire structured containing a number of question closed and open are measuring two aspect main :

- Welfare economy farmers ( for example , increasing income , reduction cost production ).
- Environmental impact ( e.g. , water quality) soil , water conservation , and biodiversity life ).
- Questionnaire This arranged based on 5- point Likert scale For data quantification , as well as question open For gather information qualitative addition related experience farmer in apply technique management sustainable .

Data collected through :

- Survey Questionnaire : Questionnaire shared to the farmers who have identified as sample study.
- Observation Field : For ensure accuracy of related data practice management land applied , done observation directly in some land agriculture.
- In- depth Interview : Interview done For get more data in related reason farmer apply management sustainable and the challenges they face face .

Data analyzed use approach statistics descriptive and inferential :

- Analysis Descriptive : Used For describe characteristics respondents and describe perception farmer to welfare economy and impact environment from management land sustainable .

- Analysis Multiple Linear Regression : Used For test connection between variable independent ( technique) management land ) and variables dependent ( welfare) economy and impact environment ).
- Validity and Reliability Test : Conducted For ensure instrument study give consistent and accurate results .
- Analysis This aiming For identify technique management land which sustainable provides the most significant impact to welfare farmers and conditions environment in the research area .

### 3. Results & Discussion

#### **Sustainable Land Management Techniques to Welfare Economy Farmer**

In the section this , we will discuss How various technique management land sustainable , such as rotation plants , agroforestry , and use fertilizer organic , giving impact on welfare economy farmers . Research show that practice like rotation plant No only increase productivity but also reduces risk failure harvest consequence change climate that is not expected (Putri et al., 2021; Mulyadi & Santoso , 2020; Wibisono, 2019).

Table 2 comparison income farmer before and after apply technique management land sustainable

Soil Management Techniques	Revenue Before Implementation (Rp)	Income After Implementation (Rp)	Percentage Increase (%)
Crop Rotation	2,500,000	3,200,000	28%
Agroforestry	2,800,000	3,500,000	25%
Organic fertilizer	2,700,000	3,300,000	22%

(Source: Research Field Survey Data)

#### **Contribution of Sustainable Land Management to Sustainability Environment**

In the subtitle this , we explore impact management land sustainable to environment , especially on quality soil and water conservation . Practices management land sustainable proven capable maintain and improve quality land in term length ( Harsono et al., 2022; Nugroho, 2021; Safitri & Wijaya, 2020). Rotation plants , for example , can help restore nutrition land , while agroforestry play a role important in to preserve biodiversity .

Table 3 . Comparison of Soil Fertility Levels Before and After Implementation Sustainable Land Management

Soil Fertility Parameters	Before Implementation	After Implementation
Organic Content (%)	1.2	2.5
Soil pH	5.5	6.2
Water Capacity (%)	15	30

### in Implementing Sustainable Land Management among Farmer Local

Although Lots benefits that can be obtained from management land sustainable , there is a number of challenges that hinder adoption technique this is among farmer local . Lack of knowledge and access to modern technology becomes obstacle main (Setiawan & Hartanto, 2022; Pratama et al., 2021; Yulianto , 2020). In addition that , the cost beginning For implement a number of technique like agroforestry Enough high , so that Lots the doubtful farmer For invest .

### Comparison of Economic and Ecological Results between Conventional and Sustainable Land Management

This section focus on comparison between results economic and ecological from management land conventional and sustainable , showing that practice sustainable No only more friendly environment but also profitable in a way economy in term length ( Handayani et al., 2021; Ananda & Suharto, 2020; Kurniawan, 2019).

Table 4. Comparison of Sustainable Management

Criteria	Conventional Management	Sustainable Management
Production Cost (Rp)	4,000,000	3,200,000
Harvest Yield (Kg)	2,000	2,500
Land Deterioration (Erosion/Year)	15%	5%

### Research Implications for Agricultural Policy Sustainable

Result of study This can used as material consideration in formulate policy For support agriculture sustainable . Adoption management land sustainable at the level national will impact positive on improvement welfare farmers and conservation ecosystem .

## 4. Conclusion

Conclusion from study This show that implementation management land sustainable own impact significant in increase welfare economy farmer as well as repair condition environment . Practices like rotation plants , agroforestry , and use fertilizer organic proven capable increase productivity results harvest as well as lower cost production . This is in a way direct contribute to the improvement income farmers , besides increase quality land and reduce erosion . Findings This answer objective research , namely For analyze impact positive management land sustainable to welfare economy and environment in the research area .

Besides that , research This also identifies a number of challenges that hinder adoption wide technique management sustainable , such as lack of knowledge technical and cost high implementation . However , with support appropriate government policies and programs , obstacles This can overcome so that practice more agriculture sustainable can adopted in a way widespread . Implications from findings This show that management land sustainable No only answer need farmer For increase welfare , but also support effort preservation environment , so that create impact positive term long for ecosystem and economy local .

## 5. References

- Ananda, D., & Suharto, M. (2020). Economics and Environmental Impact of Sustainable Soil Management Practices in Agroecosystems . *Journal of Environmental Management* , 255, 109-124.
- Gonzalez-Sanchez , E.J., Ordonez -Fernandez, R., Carbonell-Bojollo , R., Veroz-Gonzalez , O., & Gil-Ribes , J.A. (2021). Conservation Agriculture Practice for Soil Health : Long-Term Study of Environmental Benefits . *Agriculture , Ecosystems & Environment* , 295, 106933.
- Handayani, P., Rahardjo, B., & Utami, L. (2021). Comparative Study of Economic Outcomes in Conventional and Sustainable Soil Management . *International Journal of Agricultural Sustainability* , 19(3), 345-362.
- Environmental Benefits of Agroforestry Practices in Soil Conservation . *Soil and Water Conservation Journal* , 77(5), 451-460.
- Kurniawan, A. (2019). Implementation of Sustainable Agriculture: A Study of Economic and Ecological Impacts in Rural Areas of Indonesia. *Journal of Sustainable Environmental Management*, 17(2), 211-226.
- Lal , R., Stewart , B. A., & Morgan, C. (2020). Soil Health and Agricultural Productivity : Role of Sustainable Soil Management . *Agricultural Systems*, 177, 102713.
- Mulyadi, D., & Santoso, H. (2020). Evaluating the socioeconomic Impact of Crop Rotation on Farmers in Tropical Agroecosystems . *Tropical Agriculture Journal* , 52(4), 312-329.

- Nugroho, A. (2021). Effect of Sustainable Soil Practice on Soil Fertility and Crop Yield : A Comparative Study. *Soil Science Research Journal* , 65(1), 88-99.
- Pratama, Y., Hartanto, R., & Yulianto, S. (2021). Challenges in the Adoption of Sustainable Agriculture Practice among Smallholder Farmers in Indonesia. *Journal of Agricultural Research* , 15(1), 45-58.
- Putri, MN, Setiawan, S., & Rahman, T. (2021). Agricultural Adaptation Strategies and Farmer Welfare Improvement in a Changing Climate . *Agricultural Economics Research Review* , 33(3), 301-320.
- Safitri, L., & Wijaya, B. (2020). Soil Quality Enhancements through Organic Fertilization in Sustainable Farming Systems. *Environmental Soil Science* , 80(2), 182-194.
- Setiawan, D., & Hartanto, R. (2022). Barriers to Sustainable Agriculture Adoption among Rural Farmers : An Indonesian Perspective . *Sustainable Agriculture Journal* , 9(1), 51-63.
- Smith, A., Johnson, L., & Williams, T. (2019). Organic Fertilizer Use and Its Role in Sustainable Agricultural Productivity . *Agricultural Science Journal* , 28(4), 417-432.