

Implementation of Good Handling Practices (GHP) in the Harvesting and Post-Harvest Handling of Na-Oogst Tobacco in Jember Regency

Fanny Angelina

University of Jember,
Indonesia

Luh Putu Suciati*

University of Jember,
Indonesia

Ahmad Zainuddin

University of Jember,
Indonesia

Rizky Yanuarti

University of Jember,
Indonesia

Article Info

Article history:

Received: February 20, 2026

Revised: February 25, 2026

Accepted: March 08, 2026

Keywords:

Farmers' knowledge, GHP procedure, Jember regency, Multiple linear regression, Na-Oogst tobacco quality

Abstract

Purpose of Study: Na-Oogst tobacco is a leading export commodity from Jember Regency, widely used as raw material for international cigars. However, its export performance has declined due to quality deterioration, pest infestations, the dominance of filler tobacco over wrapper leaves, and the suboptimal implementation of Good Handling Practices (GHP). This study aims to analyze the level of knowledge and implementation of GHP as well as the influencing factors in Na-Oogst tobacco farming.

Methodology: The research was conducted in three main production centers of Jember, namely Ambulu, Rambipuji, and Tempurejo Districts, involving 45 farmers selected through proportionated random sampling. Data were collected through interviews, observations, and documentation, and analyzed using Likert scale scoring and multiple linear regression.

Main Findings: Farmers' knowledge of GHP is categorized as very high, with a score of 38.09 (84.64%), particularly in aspects of understanding and post-harvest evaluation. The level of GHP implementation is also very high, with a score of 67.87, especially in harvesting time, curing, harvesting techniques, and fresh leaf sorting. Regression analysis indicates that all independent variables simultaneously influence GHP implementation, with two variables showing significant partial effects: farmers' income and knowledge of harvest and post-harvest practices. Higher income supports farmers' ability to maintain better cultivation and post-harvest standards, while technical knowledge determines the quality of GHP application. **Novelty/Originality of This Study:** The importance of strengthening farmers' capacity to improve the competitiveness of Na-Oogst tobacco in international markets.

To cite this article: Angelina, F., Suciati, L.P., Zainuddin, A., Yanuarti, R. (2026). Implementation of Good Handling Practices (GHP) in the Harvesting and Post-Harvest Handling of Na-Oogst Tobacco in Jember Regency. *Agribusiness and Integrated Farming System Journal*, 1(1), 23-28.

This article is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) ©2026 by author/s

INTRODUCTION

Na-Oogst tobacco is a high-value agricultural commodity because it is used as the primary raw material in the cigar industry. This commodity requires more specific cultivation and handling practices, as well as higher production costs, to meet international quality standards compared to other tobacco varieties such as Voor-Oogst (Santoso et al., 2019). Quality characteristics which include physical, chemical, and organoleptic aspects require a meticulous production process, from seed selection, fertilization, and pest control to post-harvest handling. The success of Na-Oogst tobacco production is greatly influenced by the farmers' expertise and the precision of the treatments applied at each stage of cultivation, as it is a capital-intensive, labor-intensive, and high-risk crop (Santoso, 2013). Jember Regency is known as one of the world's leading centers for cigar tobacco and serves as the primary supplier of wrapper leaves (dekblad), binder

* Corresponding author:

Angelina, F., Suciati, L.P., Zainuddin, A., Yanuarti, R. University of Jember, Indonesia. ✉ suciati.faperta@unej.ac.id

leaves (omblad), and filler for the international market (Supriadi, 2017) . The dynamics of tobacco production and quality still face challenges, one of which was a decline in exports in 2013 due to the discovery of the *Lasioderma* pest, which led to a loss of confidence among importers and a significant drop in export value (Utami et al, 2014) .

In addition to pest problems, climate variability also affects productivity. Weather anomalies in 2022 caused heavy rainfall and flooding of farmland, thereby reducing tobacco production in East Java (Dinas Perkebunan Provinsi Jawa Timur, 2023). These conditions were exacerbated by suboptimal harvest and post-harvest management, which contributed to a decline in the quality of dried tobacco. In 2022, cigar tobacco production declined by 33.8% compared to the previous year, continuing to fall to US\$42.6 million from US\$86.3 million in 2021 (Emanuella, 2024) . Tobacco must also comply with strict regulations, including Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT), making consistent quality a critical requirement (Emanuella, 2024; Yafi et al, 2025) . To ensure the quality of cigar tobacco, Good Agricultural Practices (GAP) and Good Handling Practices (GHP) must be implemented for the cultivated Na-Oogst tobacco. The application of GHP encompasses harvesting, drying, transportation, and storage practices that must meet standards for cleanliness, ventilation, and contamination prevention. This study aims to analyze the level of knowledge and implementation of Good Handling Practices (GHP) during the harvest and post-harvest stages of Na-Oogst tobacco in Jember Regency, as well as to identify the factors influencing its implementation.

METHOD

Research Location and Subjects

This study is a descriptive quantitative research aimed at analyzing the level of knowledge and implementation of Good Handling Practices (GHP) for Na-Oogst tobacco, as well as the factors influencing them, in Jember Regency—specifically in Ambulu, Rambipuji, and Tempurejo subdistricts, which are the main production centers for Na-Oogst tobacco. These subdistricts were selected because they are representative of tobacco characteristics found in several other subdistricts. The regional characteristics and tobacco quality in Ambulu and Wuluhan subdistricts tend to be similar due to their proximity. The regional characteristics and tobacco quality in Rambipuji differ from those in Tempurejo Subdistrict, which is surrounded by the Meru Mountains. Sabrang Village was selected to represent the tobacco-growing center in Ambulu Subdistrict, while Sidodadi Village is the sole tobacco-growing center in Tempurejo Subdistrict, and Nogosari Village was chosen as the sampling site in Rambipuji Subdistrict. Sabrang Village was selected to represent the tobacco-growing center in Ambulu Subdistrict, while Sidodadi Village is the only tobacco-growing center in Tempurejo Subdistrict, and Nogosari Village was selected as the study site in Rambipuji Subdistrict.

Data Collection

The data used in this study were obtained from a questionnaire regarding knowledge and implementation of Good Handling Practices (GHP) for Na-Oogst tobacco in Jember Regency. The variables related to knowledge of Good Handling Practices (GHP) include educational background and experience; knowledge of harvesting and post-harvest procedures; understanding of harvesting and post-harvest procedures; knowledge (know); comprehension; implementation; analysis; synthesis; and evaluation. Meanwhile, data on the application of Good Handling Practices (GHP) for Na-Oogst tobacco in Jember Regency included the implementation of harvesting and post-harvest procedures as stipulated in Ministry of Agriculture Regulation No. 56 of 2012 and field observations. The variables for the implementation of Good Handling Practices (GHP) include leaf characteristics, color changes, picking time, picking period, leaf maturity, harvest duration, harvesting techniques, leaf placement techniques, transport containers, transport duration, fresh leaf sorting, pruning, curing, drying, and dry leaf sorting; these data are measured using a Likert scale. Other relevant data include farmers' age, formal education, land area, farming experience, tobacco prices, income, partner involvement, and ownership of drying warehouses, all of which will be analyzed quantitatively.

Research Analysis Method

This study analyzes the influence of two or more independent variables on a dependent variable to determine whether or not there is a functional relationship between two or more independent variables and one dependent variable (Sugiyono, 2018). The purpose of this analysis is to identify the factors influencing the implementation of Good Handling Practices (GHP) during the harvest and post-harvest stages of Na-Oogst tobacco in Jember Regency. These factors were identified using multiple linear regression analysis with the following formula:

$$Y = a + b_1.X_1 + b_2.X_2 + b_3.X_3 + b_4.X_4 + b_5.X_5 + b_6.X_6 + b_7.X_7 + b_8.D_1 + b_9.D_2 + e$$

Where:

- Y : Level of Good Handling Practices (GHP) Implementation (%)
- X₁ : Age (years)
- X₂ : Education (years)
- X₃ : Land area (ha)
- X₄ : Experience in tobacco farming (years)
- X₅ : Tobacco price (Rp/kg)
- X₆ : Revenue (Rp/MT)
- X₇ : Knowledge of harvesting and post-harvest activities (%)
- D₁ : Partner participation (dummy variable, 1 = participated; 0 = did not participate)
- D₂ : Ownership of a drying warehouse (dummy variable, 1 = owned; 0 = rented)
- a : Constant
- b : Regression coefficient
- e : Error

The regression coefficients were obtained from data analysis using IBM SPSS, with model accuracy measured by the coefficient of determination (R²). The F-test was used to determine the simultaneous effect of the independent variables, while the t-test was used to test the partial effects of the variables. Classical assumption tests were conducted prior to model testing using four tests: a normality test to ensure that the residuals were normally distributed; a multicollinearity test with a VIF value < 5; a heteroscedasticity test based on the scatterplot pattern; and an autocorrelation test based on the Durbin-Watson statistic.

RESULTS AND DISCUSSION

Characteristics of Na-Oogst Tobacco Respondents

Farmers in Jember Regency exhibit a variety of characteristics because the regency is divided into several areas with distinct features. The areas in Jember Regency that served as the research sites were the subdistricts of Ambulu, Rambipuji, and Tempurejo. The characteristics of Na-Oogst tobacco farmers in Jember Regency, based on a sample of farmers from these three areas, are as follows.

Table1 . Characteristics of Na-Oogst Tobacco Farmers in Jember Regency

No.	Description	Average	Min	Max
1.	Age (years)	47	24	60
2.	Education (years)	9	6	16
3.	Farming experience (years)	27	6	47
4.	Land area (ha)	0.7	0.0135	2.5
5.	Tobacco price (Rp/quintal)	5,000,000	2,500,000	8,000,000
6.	Revenue (Rp)	48,000,000	15,000,000	180,000,000

The characteristics of Na-Oogst tobacco farmers in the three study subdistricts showed considerable variation. The average age of the respondents was 47 years, placing them in the productive age group, which generally possesses adequate physical ability and experience in managing agricultural businesses. This finding is consistent with Astuti et al (2021), who state that being of productive age supports effective land management. Farmers' educational levels ranged from elementary school to a bachelor's degree, with the average being junior high school. These differences in educational levels have the potential to influence farmers' ability to absorb information and adopt cultivation

innovations. The average length of farming experience was 27 years, reflecting farmers' involvement in tobacco farming across generations—a crucial asset in enhancing technical and managerial skills. The area of land under cultivation ranges from 0.0135 to 2.5 ha, with an average of 0.7 ha, reflecting the predominance of small-scale operations. In addition, the selling price of tobacco ranges from IDR 2,500,000 to IDR 8,000,000 per quintal, with an average of IDR 5,000,000 per quintal. Farmers' incomes also vary, ranging from IDR 15,000,000 to IDR 180,000,000 per growing season, with an average of IDR 48,000,000 per season. In general, internal factors such as age, education, experience, and land area—which, according to the “by . (2023)”, influence farming success—are also reflected in the conditions of Na-Oogst tobacco farmers in Jember, making them important variables in the analysis of GHP implementation.

Levels of Knowledge and Implementation of GHP for Na-Oogst Tobacco

Farmers' knowledge of Na-Oogst tobacco harvesting and post-harvest activities ranges from high to very high. Most farmers have a junior high school education and considerable farming experience, which has generally been passed down through generations. These factors contribute to a good level of understanding of technical procedures, although a small number of new farmers have not yet fully mastered the concepts and practices.

Procedural knowledge, including harvesting and post-harvest stages, is generally well understood by nearly half of the respondents. Many of them are able to explain and apply the steps in accordance with field guidelines, although there are still shortcomings in certain areas, such as the number of leaves during the pruning process and the management of drying sheds. Farmers with limited experience tend to have a lower level of understanding and rely on laborers for technical processes. In terms of cognitive ability indicators (know, comprehension, implementation, analysis, synthesis, evaluation), farmers demonstrated high achievement in the areas of comprehension and evaluation. This reflects their ability to identify post-harvest problems and determine practical solutions, particularly regarding ventilation settings in drying warehouses. However, the implementation aspect received the lowest score due to various on-the-ground constraints, including infrastructure, price stability, and the consistent application of GHP procedures.

Overall, the average knowledge level of 84.64% falls into the “high” category. The predominance of the “high” to “very high” categories indicates that GHP principles have been well understood. However, further reinforcement is still needed regarding implementation, particularly for farmers with limited experience or those who have recently entered the Na-Oogst tobacco farming sector, so that GHP implementation can proceed more consistently and lead to improved crop quality.

Level of Implementation of GHP for Na-Oogst Tobacco

The implementation of GHP among Na-Oogst tobacco farmers demonstrated high performance in most stages of harvesting and post-harvest handling. The results of the indicator assessment show that the quality of the harvest generally met the visual and physical standards set by SNI, particularly regarding leaf color change, ripeness, and stem quality. The majority of farmers were able to visually identify the level of leaf ripeness, as indicated by the high proportion of respondents who gave good to very good scores on the indicators of leaf color and condition prior to picking.

The harvesting phase showed that nearly all farmers had picked the leaves at the right time and followed the recommended harvesting intervals. Harvesting techniques and post-harvest leaf handling were also carried out properly, although a small number of farmers still faced limitations in maintaining leaf freshness in the field. The transportation process from the fields to the drying warehouses proceeded relatively quickly because most farmers had warehouses located near their planting areas, thereby minimizing the risk of physical damage to the leaves.

The post-harvest stage demonstrated consistent implementation of activities ranging from sorting fresh leaves, curing, and drying to sorting dried leaves. All respondents have correctly implemented the curing procedure, and the majority follow the appropriate drying steps, including regulating warehouse temperature and ventilation. However, the bundling indicator shows lower performance compared to other indicators, particularly regarding the number of leaves per bundle, which does not yet fully comply with technical recommendations due to the need to boost labor efficiency.

Overall, the data analysis results show a total implementation score of 3,054 with an average of 67.87, which falls into the “very high” category. The high implementation scores across most indicators

particularly the physical condition of the coffee cherries, leaf maturity, harvesting techniques, curing, and drying confirm that farmers have understood the principles of good postharvest handling. However, field findings indicate that filler quality still dominates the final product, suggesting that the high level of GHP implementation at the farmer level has not yet been fully supported by price incentives or a supportive market structure.

Factors Affecting the Implementation of GHP in Na-Oogst Tobacco Farming

The implementation of Good Handling Practices (GHP) in Na-Oogst tobacco farming is influenced by several internal and external factors affecting farmers. The results of the classical assumption tests indicate that the regression model meets statistical requirements, as evidenced by normally distributed residuals, the absence of heteroscedasticity, and VIF values <5 and a Durbin-Watson statistic of 2.252. Thus, the model is suitable for further analysis.

Table2 . Regression Results for Factors Affecting the Implementation of Good Handling Practices (GHP) in Na-Oogst Tobacco Farming in Jember Regency

Model	Coefficient	Calculated t-value	Sig. t
(Constant)	62.670	7.213	0.000
Age (X ₁)	0.159	1.509	0.140
Education (X ₂)	-0.140	0.516	0.609
Land Area (X ₃)	-4.354	-1,757	0.088**
Tobacco farming experience (X ₄)	0.025	0.315	0.755
Tobacco price (X ₅)	2.595×10 ⁻⁷	0.495	0.624
Income (X ₆)	8.950×10 ⁻⁸	2.491	0.018*
Knowledge of harvesting and post-harvest handling (X ₇)	0.219	3.162	0.003*
Participation in partnerships (D ₁)	-2.293	-1,313	0.198
Ownership of drying warehouses (D ₂)	1.520	0.869	0.391
Calculated F-value	5.996		
Sig. F	0.000		
Adjusted R ²	0.505		
Normality Test	Normally distributed		
Multicollinearity Test	No signs of multicollinearity		
Heteroscedasticity Test	No signs of heteroscedasticity		
Autocorrelation Test	No signs of autocorrelation		

The F-test shows that all independent variables have a significant simultaneous effect on the level of GHP implementation. The adjusted R² value of 0.505 indicates that 50.5% of the variation in GHP implementation can be explained by the variables in the model, while the remainder is influenced by other factors outside the scope of this study.

Partially, only three variables were found to be significant: income, knowledge of harvesting and postharvest practices, and land area (at a 10% confidence level). Income had a positive effect, indicating that farmers' financial capacity increases the likelihood of fully implementing GHP, including access to labor and postharvest facilities. Knowledge of harvesting and post-harvest practices also had a significant positive effect, confirming that technical understanding is a key factor in the consistent implementation of standards. Conversely, land area had a negative effect, indicating that larger plots increase the difficulty of monitoring, thereby reducing the consistency of GHP implementation.

Other variables, such as age, education, farming experience, tobacco prices, participation in partnerships, and ownership of drying warehouses, did not have a significant partial effect. This indicates that these factors have not yet become strong determinants due to differences in farmers' capacity, price fluctuations, technological limitations, and variations in work systems that are not yet standardized. Participation in partnerships and ownership of drying warehouses were also not significant because operational standards were not fully followed or were not accompanied by optimal warehouse management.

Overall, the findings indicate that GHP adoption at the farmer level is very high; however, significant determinants are more strongly influenced by economic capacity and technical knowledge than by

demographic factors. Consequently, increasing technical training and financial support will be more effective in strengthening the sustainable adoption of GHP.

CONCLUSION

The research results show that the performance of the coffee-based creative agribusiness at BUMDesma Giri Arjuno falls into the high category in the innovation aspect with a score of 4.07 and the technology aspect with a score of 3.50, as well as the very high category in the value-added aspect with a score of 4.85. The innovation aspect is demonstrated through the implementation of an agroforestry system, product diversification such as green beans, roasted beans, and ground coffee, as well as the development of branding based on the local identity of Arjuno Arabica coffee. The technology aspect is reflected in the use of modern equipment in the post-harvest coffee processing, which helps improve efficiency and product quality. Meanwhile, the high level of value added indicates that processing and product diversification can enhance the quality and market value of coffee compared to the sale of raw coffee beans.

An analysis of the Value Proposition Canvas (VPC) shows that consumers desire coffee products with consistent quality, distinctive flavor, a strong local identity, and ease of purchase. Furthermore, the Business Model Canvas (BMC) analysis indicates that business model development can be achieved by strengthening the value proposition based on agroforestry coffee, optimizing digital marketing, strengthening customer relationships through the coffee community, and expanding partnerships with the government, academia, and coffee industry stakeholders. Thus, the development of a creative coffee-based agribusiness at BUMDesma Giri Arjuno has the potential to enhance the competitiveness of specialty coffee products and support the economic sustainability of the local community.

REFERENCES

- Astuti, D. E. W., Supardi, S., Awami, S. N., & Hastuti, D. (2021). Faktor yang Mempengaruhi Produksi Tembakau (*Nicotiana tabacum*) di Kecamatan Sulang Kabupaten Rembang. *SEA*, 10(1), 1–10.
- Dinas Perkebunan Provinsi Jawa Timur. (2023). Laporan Kinerja (LAKIN) Tahun 2022. Dinas Perkebunan Provinsi Jawa Timur. <https://disbun.jatimprov.go.id/web/assets/sakip/laporan-kinerja-lakin-tahun-20227.pdf>
- Emanuella, B. (2024, October 14). Cerutu Indonesia: Simbol Kekayaan & Cita Rasa Kelas Atas Warga Dunia. *CNBC Indonesia*. <https://www.cnbcindonesia.com/research/20241014153807-128-579464/cerutu-indonesia-simbol-kekayaan-cita-rasa-kelas-atas-warga-dunia>
- Fajariyah, D. P., Widayanti, S., & Fitriana, N. H. I. (2023). Analisis Daya Saing Usahatani Tembakau Di Kabupaten Sumenep. *Jurnal Ilmu-Ilmu Agribisnis*, 11(2), 79–86. <https://doi.org/10.23960/jiia.v11i2.6864>
- Santoso, K. (2013). *Tembakau Dibutuhkan dan Dimusuhi*. Jember University Press.
- Sugiyono. (2018). *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)*. Alfabeta.
- Supriadi, B. (2017, August 13). Jember Kota Cerutu Indonesia. *Jawa Pos Radar Jember*.
- Utami, S. W., Daryanto, A., & Rujito, H. (2014). Strategi Peningkatan Daya Saing Tembakau Besuki Na-Oogst Berbasis Perbaikan Kinerja Mutu. *Jurnal Manajemen & Agribisnis*, 11(2), 100–109. <https://doi.org/https://doi.org/10.17358/jma.11.2.100-109>
- Wardhono, A., Arifandi, J. A., & Indrawati, Y. (2019). *Standar dan Mutu Tembakau Besuki Na-Oogst*. In *Pustaka Abadi*. CV. Pustaka Abadi. <https://books.google.com/books?hl=id&lr=&id=29vYDwAAQBAJ&oi=fnd&pg=PA1&dq=definisi+tembakau&ots=CU7gizRDdz&sig=wwp5PBM5iVzxpXPZdYJE8S55qQ0>
- Yafi, M. A., Suharno, S., & Erwidodo, E. (2025). Dinamika Daya Saing Cerutu Indonesia di Pasar Internasional. *Jurnal Agribisnis Indonesia*, 13(1), 76–93. <https://doi.org/10.29244/jai.2025.13.1.76-93>